

**EXPANDED SITE INSPECTION REPORT**

**WILCOX OIL COMPANY  
BRISTOW, CREEK COUNTY, OK  
EPA CERCLA I.D. NO.: OKD001010917**

Prepared for

U.S. Environmental Protection Agency  
Region 6  
1445 Ross Avenue, Suite 1200  
Dallas, TX 75202-2733

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Submitted by

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87534

March 1997



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EPA CERCLA I.D. NO.: OKD001010917

March 1997

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## **SECTION 1 INTRODUCTION**

### **1.1 BACKGROUND**

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the 1986 Superfund Amendments and Reauthorization Act (SARA), Roy F. Weston, Inc. (WESTON®) has completed an Expanded Site Inspection (ESI) of the Wilcox Oil Company (Wilcox) site (EPA Identification No.: OKD001010917) located in Bristow, Creek County, Oklahoma (Figure 1-1). The U.S. Environmental Protection Agency (EPA) Region 6 retained WESTON to complete this investigation under EPA Contract No. 68-W9-0015 and Work Assignment No. 56-6JZZ.

This document represents the final report for the ESI. The purpose of this report is to provide the background information collected for the site, to discuss the ESI sampling activities, and to present the analytical data obtained as part of the investigation.

### **1.2 OBJECTIVES OF THE INVESTIGATION**

The ESI is intended to be the final investigation in an ongoing screening process of known and potential hazardous waste sites. The general purpose of an ESI is to identify immediate or potential threats that hazardous substances attributable to the site may pose to human health and the environment by documenting the existence and migration of hazardous substances related to the site and by identifying the receptors, or targets, potentially exposed to the hazardous substances. The specific purpose of this ESI was to perform a reasonable effort characterizing sources of CERCLA-eligible hazardous substances at the site and evaluating whether a release to surface water has occurred.

EPA will use the information obtained during the ESI to evaluate the site using the Hazard Ranking System (HRS) and to help decide if the site is a potential candidate for inclusion on the National Priorities List (NPL). The intent of the ESI is to provide the documentation necessary to either rank a site on the NPL or to assign a "No Further Remedial Action Planned" (NFRAP) status.

### **1.3 SCOPE OF WORK**

The ESI Scope of Work was centered on characterizing the site through the completion of limited site-related research, a site reconnaissance, and focused sampling activities. As part of this ESI, WESTON performed the following major tasks:

- An on-site reconnaissance was performed on 16 August 1996 to document current site conditions and to identify potential sources of hazardous substances at the site. WESTON performed the reconnaissance in general accordance with WESTON's Generic Site Inspection Work Plan (Document Control No. 4603-23-0008, dated 15 August 1991), the site-specific Health and Safety Plan (HASP) prepared by

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WESTON for the ESI, and the EPA Guidance for Performing Site Inspections under CERCLA, dated September 1992. During the site reconnaissance, two WESTON personnel visited the site, walked around the property, recorded observations in a logbook, and took photographs (Appendix A) to document site conditions. As part of the reconnaissance, a survey of the site's vicinity was completed to identify potential receptors, or targets, of hazardous substance migration and exposure attributable to the site. Nearby land use and potential alternative source sites were also documented.

- A site-specific Task Work Plan (TWP) was prepared to provide a detailed plan of action for subsequent ESI activities.
- Information concerning the environmental setting of the site was obtained to describe the groundwater, surface water, soil exposure, and air pathways.
- Available regulatory compliance files from federal, state, and local government agencies were reviewed, and telephone interviews were conducted with authorities knowledgeable of the site and its surroundings.
- WESTON field personnel performed sampling tasks from 18 through 20 November 1996. Samples were collected in known or suspected source areas at the site and in the suspected pathways of contaminant migration and exposure. The samples were collected in general accordance with the site-specific TWP and HASP to document the presence and migration of hazardous substances attributable to the site.
- Available information from on-site observations, records review, interviews, site area environmental and demographic characteristics, and historical sample analyses were evaluated.
- The ESI samples were sent to EPA-designated laboratories for analysis, and the resulting data were reviewed and tabulated.
- This report was prepared to present the findings of the ESI.

#### **1.4 REPORT FORMAT**

The ESI Report is presented in a format that is intended to facilitate evaluation of the site using the HRS. The report contains the following sections:

- Section 1—Introduction
- Section 2—Site Characteristics
- Section 3—Sample Collection and Analysis
- Section 4—Source Characterization
- Section 5—Groundwater Pathway
- Section 6—Surface Water Pathway

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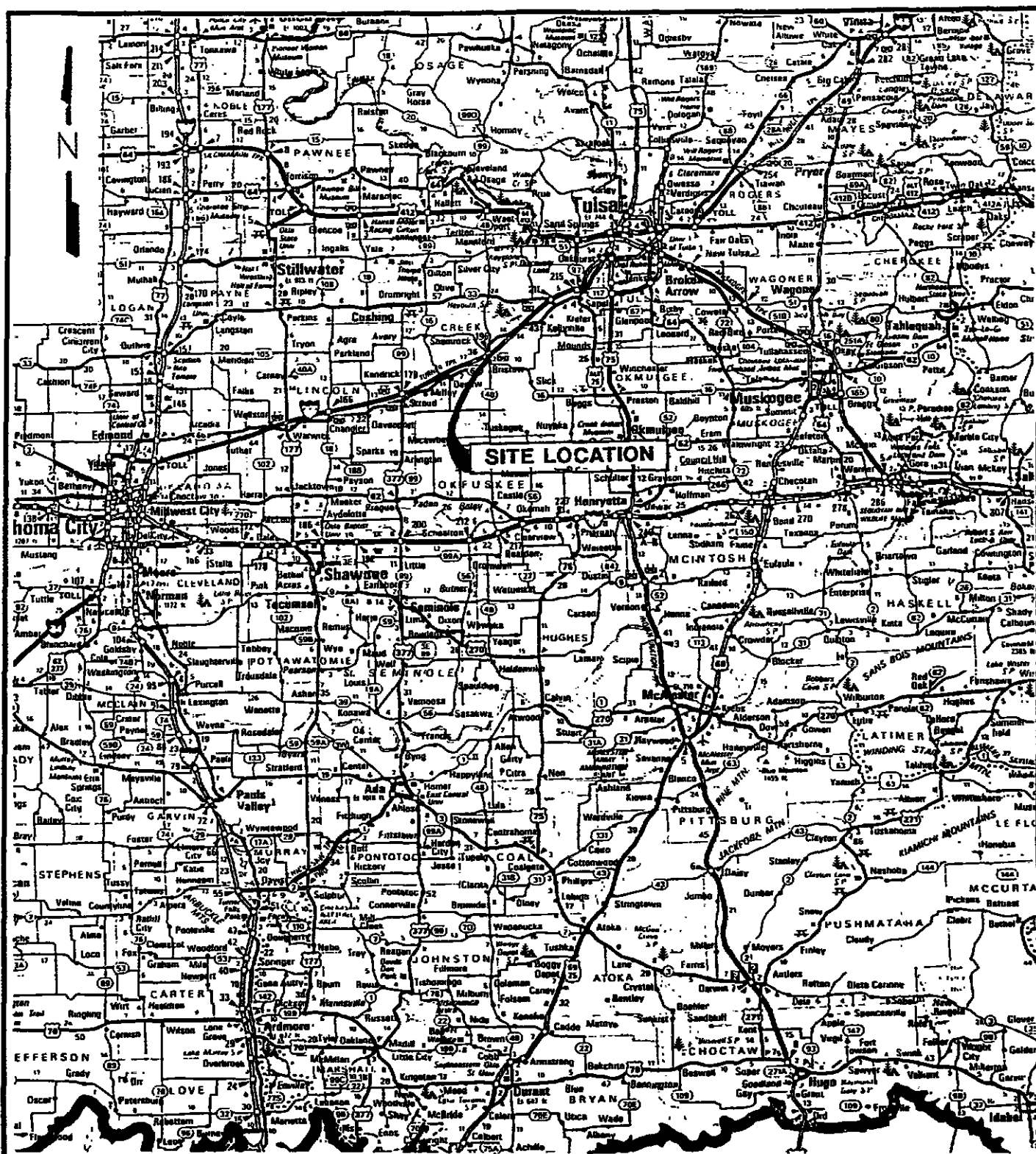


- Section 7—Soil Exposure
- Section 8—Air Pathway
- Section 9—Conclusions
- Section 10—References

Additional information is provided in the appendices following the text of the report. The appendices are as follows:

- Appendix A—Photographs
- Appendix B—Data Package Excerpts
- Appendix C—Analytical Results Summary
- Appendix D—CRQLs and CRDLs
- Appendix E—References

The figures and tables referred to throughout sections of this report are provided following the text of each section.



MAP PREPARED FROM  
RAND McNALLY ROAD ATLAS  
OKLAHOMA  
1990 EDITION

0 15 30  
APPROXIMATE SCALE IN MILES

**WESTON**  
ENGINEERING CONSULTANTS

# FIGURE 1-1 SITE LOCATION MAP

WILCOX OIL COMPANY  
BRISTOW, OKLAHOMA  
CERCLA ID NO.: OKD001010917

EPA REGION VI  
ARCS EXPANDED SITE INSPECTION  
W.Q. NO.: 04606-056-026-0600

## **SECTION 2**

### **SITE CHARACTERISTICS**

WESTON collected and reviewed available background information regarding the location, description, operational history, and regulatory compliance of the site. The discussion in this section of the report is based on this background information, which is referenced throughout the text.

#### **2.1 SITE DESCRIPTION AND BACKGROUND INFORMATION**

The following characteristics of the site are summarized in this section of the report:

- Site Location
- Site Ownership
- Site Description
- Site Operational History
- Previous Investigations
- Nearby Land Use

##### **2.1.1 Site Location**

The site location was identified based on information provided in the Preliminary Assessment (PA) and observations made during the site reconnaissance (References 1 and 2). The Wilcox site includes an abandoned and demolished oil refinery and associated tank farm and is located north of Bristow, Creek County, Oklahoma. The site can be reached by traveling southwest on Interstate 44 (I-44) from Tulsa, Oklahoma, for approximately 35 miles. Exit State Highway 66 and continue south, approximately 0.5 mile to an unnamed section line road. Turn left on the section line road and travel approximately 0.2 mile east until you reach the site (References 1 and 2). The geographic coordinates of the site are approximately 35°50'31" North latitude and 96°23'02" West longitude (Reference 1). A Site Area Map derived from a U.S. Geological Survey (USGS) 7.5-minute topographic map is provided as Figure 2-1 (Reference 3).

##### **2.1.2 Site Ownership**

Based on EPA file information, the site is currently owned by four individuals: Mr. Phil Elias, Mr. Jack White and Mr. Arthur White (father and son), and Mr. and Mrs. Lee. Jack and Arthur White own most of the property that contains the original refining facility (Reference 1). The Eliases own most of the tank farm area (approximately 80 acres), which is currently not in use. The Lees own property located in the south central portion of the site on the eastern edge of the White's property (and former refining facility).

Access agreements were obtained from all parties prior to ESI sampling activities with the exception of Mr. and Mrs. Lee. Access to the Lee property was obtained from Mrs. Lee in the field (Reference 2). Copies of the signed access agreements are included in Reference 4.

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### 2.1.3 Site Description

The Wilcox site includes remnants of an inactive oil refinery and associated tank farm. Based on recent conversations with the Oklahoma Department of Environmental Quality (ODEQ), the site boundaries have been revised from those defined in the 1994 PA to include only those areas in which Wilcox Oil Company conducted operations (Reference 5). Although Wilcox Oil Company owned property west of the railroad tracks (currently occupied by the First Assembly of God Church and pastor's residence), the facility only operated on the properties to the east of the tracks. Other refineries operated on the west side of the railroad tracks. The revised site covers approximately 98 acres and includes the northern portions of Section 29, Township 16 North, Range 9 East (Indian Meridian) (Reference 1 and 5).

The site can be divided into two major former operational areas: the refinery and the tank farm. The former refinery area is fenced and covers approximately 18 acres (Reference 1). Most of the refinery structures and tanks have been removed or are in ruins. Four aboveground storage tanks (12,500 gallons each) remain standing, in addition to a number of discarded drums and pieces of scrap iron. A bare, unvegetated area is located in the southcentral portion of the refinery. A building in the northern part of the former refinery has been converted to a residence. An intermittent creek (Tributary 1) flows southward across the eastern portion of the refinery area through a small pond in the southeast corner of the refinery area into Sand Creek.

The former tank farm covers approximately 80 acres and contains pits, ponds, and a number of circular berms that surround tank bottoms. All of the tanks have been cut down and removed; however, remnants of the tank bottoms remain and are visible. Many of the berms surrounding the pits, ponds, and former tanks have been cut or leveled. An intermittent creek (Tributary 2) is located in the eastern portion of the tank farm and flows south to Sand Creek.

A pumping or gas compressor station exists in the northcentral portion of the site (References 1 and 3). A Williams Company pipeline crosses from northwest to southeast across the middle of the site (Reference 2). A Site Plan showing the layout of the site is provided as Figure 2-2 (References 6 and 7).

### 2.1.4 Site Operational History

Wilcox Oil Company operated as a crude oil refinery from the 1920s until the property was sold by Wilcox Oil Company on 1 November 1963 (Reference 1). According to a 1930 article published in *The Refiner and Natural Gasoline Manufacturer*, the Wilcox Oil Company refinery was operated as a pilot project from about 1920 to 1928 at 1,000 barrels of oil per day by Riley Petroleum Company (Reference 8). Wilcox Oil Company acquired the original facility property (NE ¼, NW ¼, NW ¼ of Section 29) on 11 October 1928 from A.A. Rollestone (Reference 1). A modern skimming and cracking plant was constructed in 1929. The upgraded facility had an operating capacity of 4,000 barrels of crude oil per day. The main components of the system consisted of a skimming plant, cracking unit, and redistillation battery with a vapor recovery system and continuous treating equipment. The crude oil was brought directly from the field, eliminating storage and handling facilities, but resulting in crude with high bottom sediment and water.

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At some later date, the Wilcox Oil Company expanded operations by acquiring the former Lorraine Refinery facility west of the railroad and the tank farm area to the east of the refinery (Reference 1). The company sold the original site plus the expanded areas, totaling approximately 110 acres, to Wendel Sandlin on 1 November 1963. Most of the equipment and storage tanks that remained on-site in 1963 were auctioned and have been salvaged for scrap iron by private land owners. The Wilcox Oil Company no longer operates in Oklahoma, and, based on information acquired from the Oklahoma Secretary of State's office, this company merged with Tenneco Oil Company in 1967. According to file information, Jack and Arthur White acquired the original refinery property from J.M. and Kinis Bankston on 27 March 1973. It is not known if, or when, the Bankstons acquired the property from Wendel Sandlin.

Jack White's other son and daughter-in-law, Roy and Eva White, live on the site in one of the former refinery buildings (Reference 9). The Whites have salvaged the former refinery tanks and structures for scrap iron. The Lees live on-site in a mobile home. Three people, Mr. and Mrs. Lee and their 16-month-old daughter, live at the Lee residence (Reference 2). The Lees raise chickens and horses on their property. Based on aerial photographs, the Lee residence is on top of a former surface impoundment (References 6 and 7). Aerial photos also indicate that their property includes portions of a former aboveground storage tank and berm, in addition to a second surface impoundment.

#### **2.1.5 Previous Investigations**

WESTON reviewed available EPA CERCLA file information regarding site investigations and activities completed prior to this ESI. These investigations and their results are summarized below:

- EPA completed a Potential Hazardous Waste Site Identification form on 7 June 1994 (Reference 10).
- The ODEQ performed a PA for the Wilcox site on 15 December 1994 (Reference 1). The PA indicated that contamination of groundwater and soils at the site had been observed and that potential receptors exist for these pathways. The PA then recommended a Site Inspection be conducted in order to better characterize the site and to determine whether threats to human health and the environment exist.

#### **2.1.6 Nearby Land Use**

Land use in the vicinity of the site was observed during the site reconnaissance. The site is located near the northern city limits of Bristow, Oklahoma. The land adjacent to the site is described as follows (References 1 and 2):

- The site is bordered to the east and southeast by undeveloped land and scattered farms.
- The site is bordered immediately to the southwest by the City of Bristow.

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- The site is bordered immediately to the north by undeveloped land with scattered residences and commercial properties. Historical data such as aerial photos, Sanborn Fire Insurance (Sanborn) maps, and topographic maps show evidence of a former refinery and associated tank farm north of the site.
- The site is bordered to the west by the St. Louis and San Francisco Railroad. West of the railroad tracks are the First Assembly of God Church and the associated pastor's residence.

Because the site is in a former oil field, alternative source sites that may be contributing a release of hazardous substances similar to those found at the Wilcox site were identified. Alternative sources of hazardous substances include former refineries located west and north of the site. Little is known about the dates of operation of these refineries. Sanborn maps from 1915 and 1920 show that the property west of the site was occupied by Continental Refining Company, while property north of the site was occupied by Indianahoma Refining Company (Reference 11). A 1923 Sanborn map shows properties immediately west and northwest of the site occupied by the Lorraine Refining Company. West of the Lorraine Refinery and east of State Highway 66 is Roland Refining Company. The 1961 Sanborn map identifies the entire area west of the site as the "former location of Producers Oil Co, Oil Refinery." A Creek County Tax Assessor ownership map (unknown date) shows areas to the north owned by Ohio Oil (Reference 12). A historic aerial photo from 1956 shows refinery and tank farm areas to the north and west of the Wilcox facility vacant (Reference 6). These refineries are reportedly being investigated as separate sites by ODEQ.

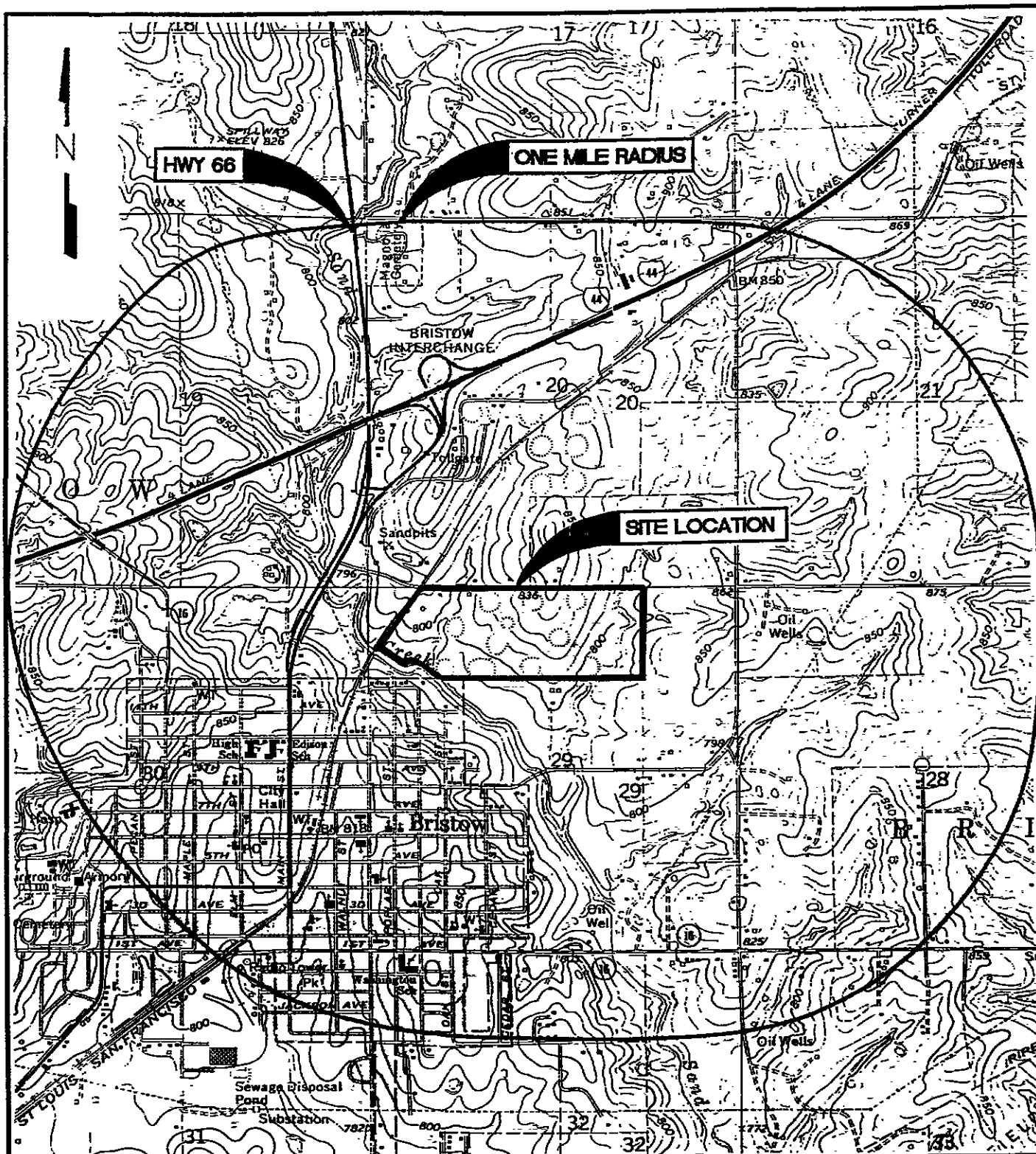
## 2.2 SUMMARY OF SITE CONCERNS


Possible concerns associated with the sources at the site and the migration of, or exposure to, site-attributable hazardous substances through the groundwater, surface water, soil exposure, and air pathways include the following:

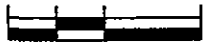
- The presence of hazardous substances at the site is of concern. A discussion of the waste characteristics of the sources sampled during the ESI is provided in Section 4 of this report.
- A release to groundwater is of major concern because sources at the site have no groundwater containment features. The site overlies an unconfined aquifer that private residences north of the site use as a water source. In addition, the site may overlie a recharge zone to another aquifer that is used for public supply.
- A release to surface water is of major concern because of the proximity to surface water bodies and the lack of containment structures around potential waste sources. Wetland frontages occur in the downstream segments of Sand Creek and the Little Deep Fork Creek. Limited recreational fishing occurs in Sand Creek and the Little Deep Fork Creek.

- A release from the soil exposure pathway is of concern. Suspected areas of soil contamination are near residences. However, on-site sources occur within fenced sections of private properties and the nearby population is relatively small.
- A release to air is of some concern because of the potential for soil contamination at the site. Although a resident population has been established for the site, the nearby population is small.

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 BASE MAP FROM:  
 U.S. DEPT. OF THE INTERIOR  
 GEOLOGICAL SURVEY  
 BRISTOW QUADRANGLE  
 SLICK QUADRANGLE  
 OKLAHOMA  
 7.5 MINUTE SERIES (TOPOGRAPHIC)  
 1973 SERIES

0 1000 2000  
  
 SCALE IN FEET

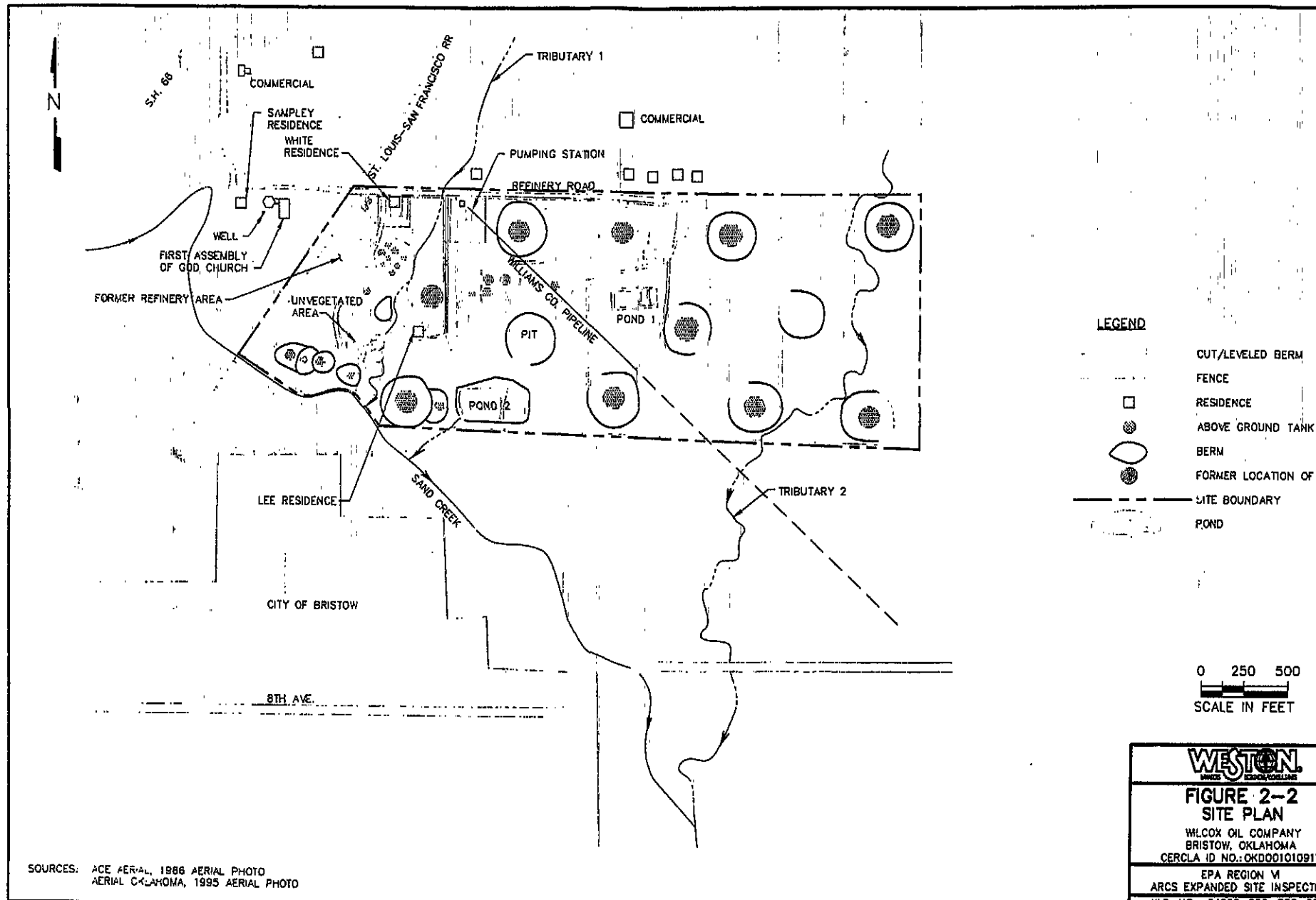
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## FIGURE 2-1 SITE AREA MAP

WILCOX OIL COMPANY  
 BRISTOW, OKLAHOMA  
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 ARCS EXPANDED SITE INSPECTION  
 W.O. NO.: 04606-056-028-0600





### SECTION 3

#### SAMPLE COLLECTION AND ANALYSIS

Sample collection and analysis are summarized in this section of the report. The related analytical results applicable to the evaluation of on-site sources and of the migration and exposure pathways are summarized in the subsequent sections of this report.

##### 3.1 SAMPLE COLLECTION

In general accordance with the objectives of the ESI, WESTON implemented a sampling strategy primarily aimed at documenting the presence and migration of hazardous substances at the Wilcox site. WESTON collected samples from on- and off-site locations from 18 November to 20 November 1996. At the request of EPA, WESTON did not collect proposed samples from properties north of the Refinery Road, where there is evidence that other refineries once existed. These other refineries are reportedly being investigated as separate sites by ODEQ. In addition, two proposed soil samples (SS-09 and SS-10) were not collected because access could not be obtained to the residential properties where these samples were to be collected. WESTON completed the ESI sampling activities in general accordance with the site-specific TWP and HASP, as well as the other documents listed in Subsection 2.1.3.

WESTON collected a total of 19 samples to document and characterize sources. These samples included 8 high-concentration waste samples (WS-01 through WS-08) and 8 low-concentration soil samples (SS-04 through SS-08, SS-11 through SS-13). Three samples (WS-06, SS-08, SS-13) were collected as field duplicate samples for quality assurance/quality control (QA/QC) purposes. In addition, three soil samples (SS-01, SS-02, SS-03) were collected from off-site locations to characterize background concentrations in soils. All samples were collected from 0 to 6 inches below ground surface (bgs); all residential soil samples were collected from the resident's property and within 200 feet of the residence.

WESTON also collected 10 sediment samples (SED-01 through SED-10) from surface water bodies to determine if a release of hazardous substances from sources at the site has occurred. Sediment sample results are discussed in Section 6, Surface Water Pathway.

##### 3.2 ESI SAMPLE LABORATORY ANALYSIS

WESTON shipped the ESI inorganic samples to ARI Laboratories in Seattle, Washington, by Federal Express Priority Overnight Service. Samples requiring organic analyses were delivered to AATS Laboratory in Broken Arrow, Oklahoma. Waste samples requiring high-concentration analyses were sent to WESTON Environmental Metrics, Inc. (EMI) laboratories in University Park, Illinois. Contract Laboratory Program (CLP) data package excerpts from the laboratory data packages prepared by these laboratories are provided in Appendix B. A data validation review of the CLP laboratory analytical data was performed by the EPA Environmental Services Assistance Team (ESAT) in Houston, Texas. The ESAT data reviewer's comments are also included in Appendix B.

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All ESI samples, with the exception of the waste samples collected on 20 November 1996, were analyzed for the following parameters:

- Target Compound List (TCL) volatile organic compounds (VOCs).
- TCL semivolatile base, neutral, and acid extractable compounds (BNAs).
- TCL pesticides and polychlorinated biphenyls (PCBs).
- Target Analyte List (TAL) inorganic constituents (metals and cyanide).

Waste samples collected on 20 November 1996 were analyzed for TCL VOCs, TCL BNAs, TAL inorganics, and total petroleum hydrocarbons (TPH) constituents, as requested by EPA.

Sample stations, descriptions, and rationales are summarized in Table 3-1. On-site soil, sediment, and surface water sample locations are shown in Figure 3-1; area sample locations are shown in Figure 3-2.

Analytical results of all samples collected during this ESI are provided in Appendix C, Tables C-1 through C-24. The Target Compound List (TCL) for organic compounds and Target Analyte List for inorganic constituents (TAL) for the above parameters are presented in Tables D-1 and D-2 in Appendix D.

### **3.3 DATA VALIDATION**

The EPA Region 6 ESAT in Houston, Texas, performed data validation for the ESI analytical data packages prepared by the CLP laboratories. The validators reviewed the data packages to verify that they meet the EPA technical requirements and QA/QC guidelines established in the EPA CLP Scope of Work (SOW) for the analyses. The validators reviewed the data packages for the following items:

- The sample holding times were reviewed to verify that the ESI samples were analyzed within contractual and technical holding time limits.
- The instrument calibrations were reviewed to verify that the calibration for target compounds met contractual QC criteria.
- Analyses were performed on method blanks, and these results were reviewed to locate potential bias.
- Surrogate recoveries were reviewed to verify that recoveries were within contractual requirements.
- Matrix spike recoveries were reviewed to verify that method recoveries were within acceptable QC limits and to determine if biases in the sample results were possible.
- Duplicate results were reviewed to verify that laboratory precision was within technical QC limits.
- The data generated by analyses outside of QC tolerances were evaluated for potential bias in the results (i.e., the reported concentrations are lower or higher than the actual

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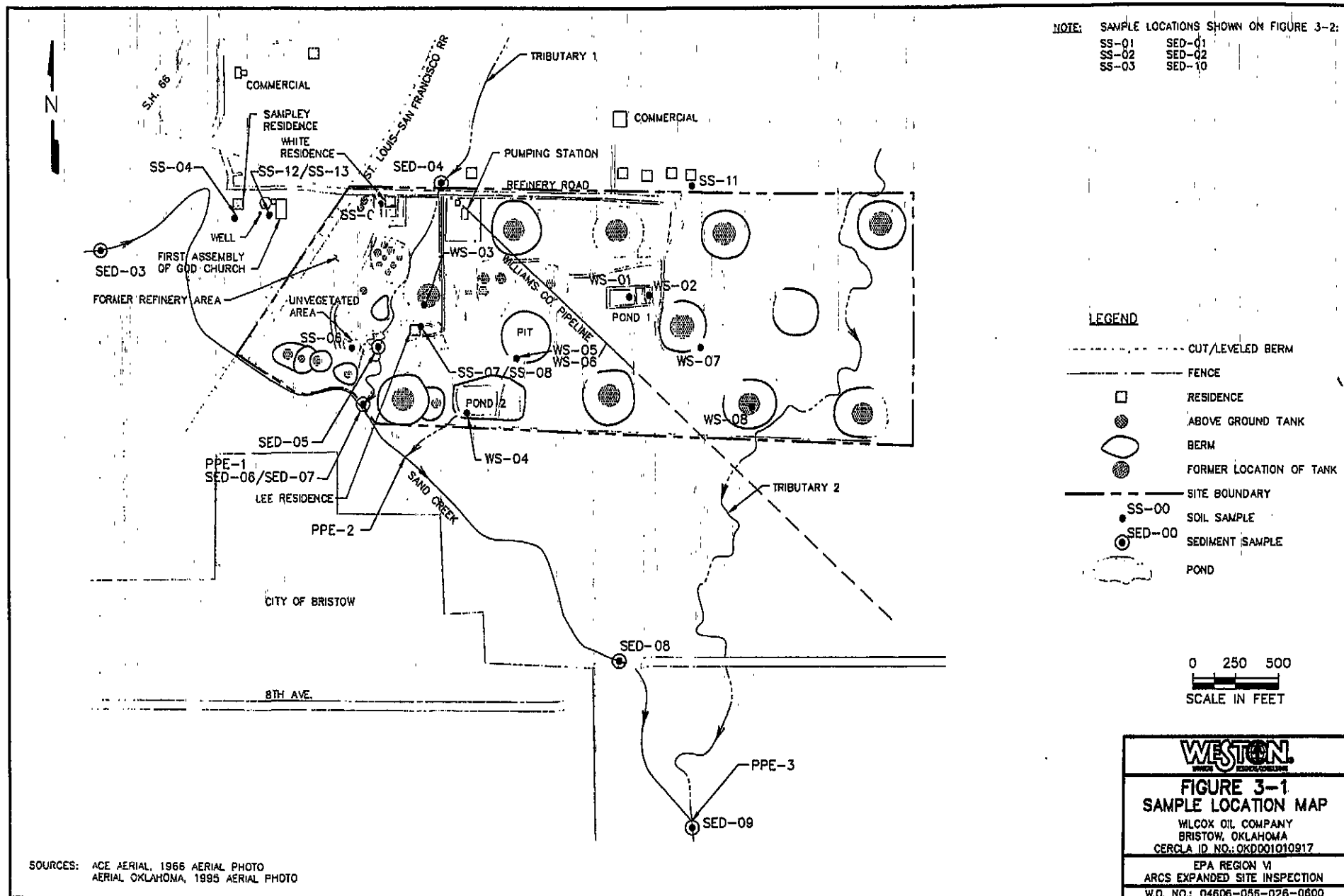
concentrations for the sample). Potentially biased data have been qualified as estimated and are J-flagged. A "h" indicates a high biased result, while a "v" indicates a low biased result.

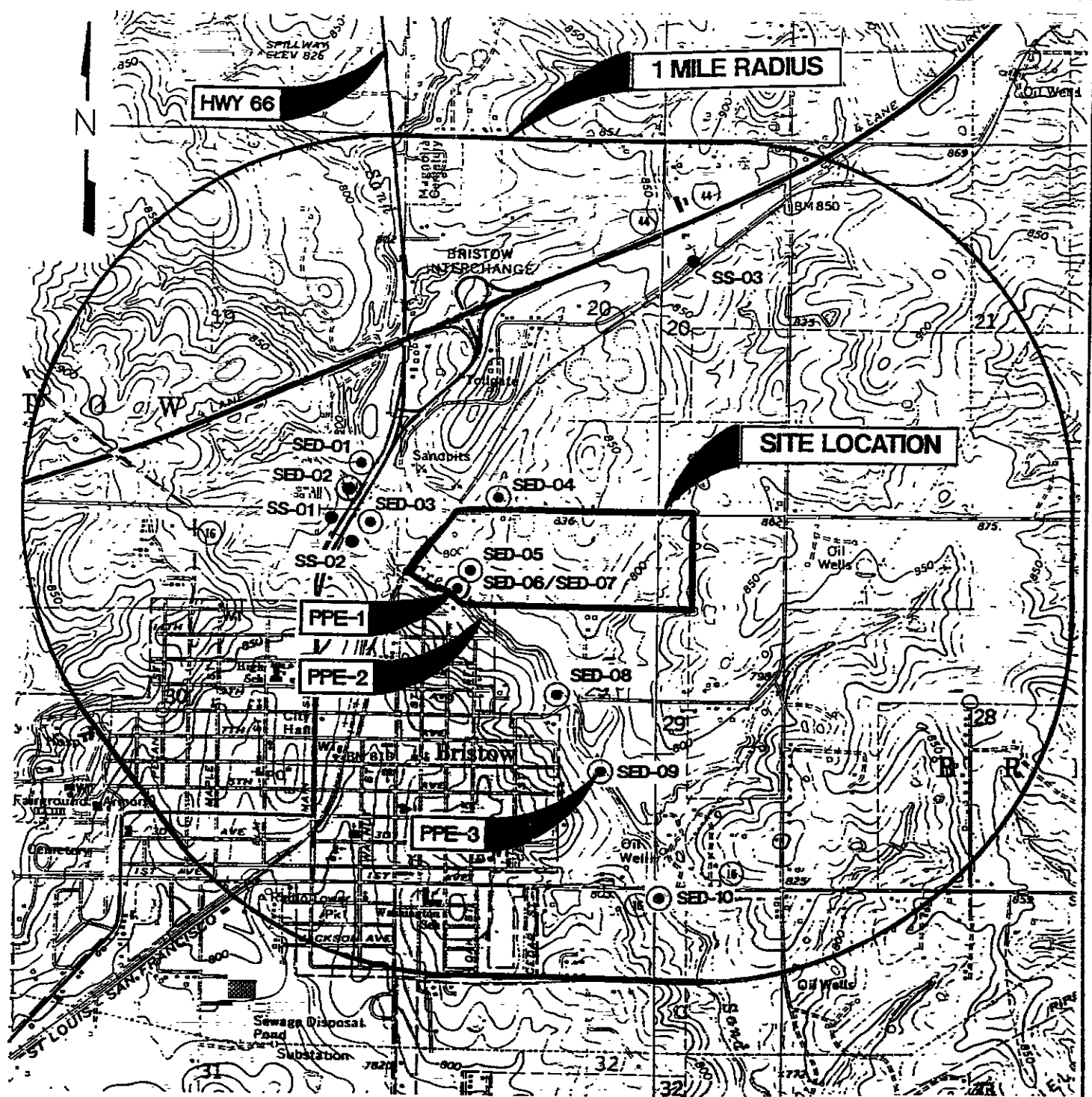
### 3.4 DATA USABILITY


In light of potential QC issues raised in the validation reports, WESTON evaluated the data to verify their suitability for developing and meeting the objectives of the ESI.

Review of the data validation reports indicate that most of the ESI data for site-attributable constituents were generated within CLP-allowable analytical QC tolerances. For the data generated outside of QC limits, the reported data quality issues were minor and do not affect overall data usability. The usability of the data was evaluated by WESTON as follows:



- The data generated by analyses within the CLP contract required laboratory QC limits were considered unbiased and have been used in the ESI without qualification. This includes all data reported to be acceptable by the data validators. Most data for site-related constituents falls into this category.
- Some data were determined to be biased by ESAT. Biased data were used without additional qualification. Data that are J-flagged without a high or low bias qualifier are considered estimated with an unknown bias.
- Based on historical site activities and the results of ESI sampling, pesticides and inorganic constituents detected in some of the samples do not appear to be attributable to the site and were qualified by WESTON as "NA" (NA = Not Attributable).
- A qualifier was added by WESTON to results below the laboratory sample quantitation limit (BSQL).

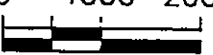




  
 BASE MAP FROM:  
 U.S. DEPT. OF THE INTERIOR  
 GEOLOGICAL SURVEY  
 BRISTOW QUADRANGLE  
 SIX QUADRANGLE  
 OKLAHOMA  
 7.5 MINUTE SERIES (TOPOGRAPHIC)  
 1973 SERIES

### LEGEND

-  SED-01  
 SEDIMENT SAMPLE LOCATION
-  SS-01  
 SOIL SAMPLE LOCATION

0 1000 2000  
  
 SCALE IN FEET

**WESTON**  
ENGINEERS DESIGNERS/CONSULTANTS

**FIGURE 3-2**  
**AREA SAMPLE LOCATION**  
**MAP**  
 WILCOX OIL COMPANY  
 BRISTOW, OKLAHOMA  
 CERCLA ID NO.: OKD001010917

EPA REGION VI  
 ARCS EXPANDED SITE INSPECTION  
 W.O. NO.: 04606-056-026-0600

**Table 3-1**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sampling Station Descriptions and Rationales**

<b>Station Identification/Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Sample Identification/QC Type</b>
<b>SED-01 Background</b>	Low concentration sediment sample collected from Sand Creek, west of S.H. 66 and upstream of the PPE.	To document a background levels of constituents in the surface water pathway.	<b>SED-01 Normal</b>
<b>SED-02 Background</b>	Low concentration sediment sample collected from Sand Creek, west of S.H. 66 and upstream of the PPE.	To document background levels of constituents in the surface water pathway.	<b>SED-02 Normal</b>
<b>SED-03 Characterization</b>	Low concentration sediment sample collected from Sand Creek, east of S.H. 66 and upstream of the PPE.	To determine levels of potential contaminant runoff from the former Lorraine Refinery located west of the site.	<b>SED-03 Normal</b>
<b>SED-04 Characterization</b>	Low concentration sediment sample collected from Tributary 1, just north of the refinery road.	To determine levels of potential contaminant runoff from former refineries to the north of the site.	<b>SED-04 Normal</b>
<b>SED-05 Characterization</b>	Low concentration sediment sample collected from pond on Tributary 1 (Lee's Pond) behind the Lee residence.	To document a release of site-attributable hazardous constituents to the surface water pathway.	<b>SED-05 Normal</b>
<b>SED-06 Characterization</b>	Low concentration sediment sample collected from Sand Creek, at PPE1.	To document a release of site-attributable hazardous substances to the surface water pathway.	<b>SED-06 Normal</b>  <b>SED-07 Duplicate</b>
<b>SED-08 Characterization</b>	Low concentration sediment sample collected from Sand Creek, approximately 0.4 mile downstream of PPE1.	To document a release of site-attributable hazardous substances to the surface water pathway.	<b>SED-08 Normal</b>
<b>SED-09 Characterization</b>	Low concentration sediment sample collected from Sand Creek at PPE3, approximately 0.6 mile downstream of the PPE1.	To document a release of site-attributable hazardous substances to the surface water pathway.	<b>SED-09 Normal</b>
<b>SED-10 Characterization</b>	Low concentration sediment sample collected from Sand Creek, approximately 0.4 mile downstream of PPE3.	To document contaminant migration in the surface water pathway.	<b>SED-10 Normal</b>
<b>SS-01 Background</b>	Low concentration soil sample collected from an off-site property east of State Highway 66.	To characterize background levels of constituents in soils.	<b>SS-01 Normal</b>

**Table 3-1 (Continued)**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sampling Station Descriptions and Rationales**

<b>Station Identification/Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Sample Identification/QC Type</b>
SS-02 Background	Low concentration soil sample collected from an off-site property, west of State Highway 66.	To characterize background levels of constituents in soils.	SS-02 Normal
SS-03 Background	Low concentration soil sample collected from an off-site property north of the site.	To document the background levels of constituents in soils.	SS-03 Normal
SS-04 Characterization	Low concentration soil sample collected from the yard of the Sampley residence.	To document the presence of hazardous constituents in surface soils.	SS-04 Normal
SS-05 Characterization	Low concentration soil sample collected from the yard of the White residence.	To document the presence of hazardous constituents in the surface soils.	SS-05 Normal
SS-06 Characterization	Low concentration soil sample collected from bare, unvegetated area in the southern portion of the White's property.	To document the presence of hazardous constituents in surface soils.	SS-06 Normal
SS-07 Characterization	Low concentration soil sample collected from the yard of the Lee residence.	To document the presence of hazardous constituents in surface soils.	SS-07 Normal  SS-08 Duplicate
SS-11 Characterization	Low concentration soil sample collected from yard of Cheatham residence (off-site).	To determine if hazardous constituents exist in residential surface soils.	SS-11 Normal
SS-12 Characterization	Low concentration sample collected from yard behind the First Assembly of God church.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-12 Normal  SS-13 Duplicate
WS-01 Characterization	High concentration waste sample collected from western portion of Pond 1.	To characterize and document the presence of hazardous constituents in the pond.	WS-01 Normal
WS-02 Characterization	High concentration waste sample collected from eastern portion of Pond 1.	To characterize and document the presences of hazardous constituents in the pond.	WS-02 Normal

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**Table 3-1 (Continued)**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sampling Station Descriptions and Rationales**

<b>Station Identification/Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Sample Identification/QC Type</b>
<b>WS-03</b> Characterization	High concentration waste sample collected from seep located north of the Lee residence.	To characterize hazardous constituents in residential property soils and document an on-site source.	<b>WS-03</b> Normal
<b>WS-04</b> Characterization	High concentration waste sample collected from west end of Pond 2.	To characterize and document the presence of hazardous constituents in the pond.	<b>WS-04</b> Normal
<b>WS-05</b> Characterization	High concentration waste sample collected from on-site Pit.	To characterize and document the presence of hazardous constituents in the Pit.	<b>WS-05</b> Normal  <b>WS-06</b> Duplicate
<b>WS-07</b> Characterization	High concentration waste sample collected along the overland flow path downgradient of a tank bottom, near the cut berm.	To characterize and document the presence of hazardous constituents associated with the tank bottom area.	<b>WS-07</b> Normal
<b>WS-08</b> Characterization	High concentration waste sample collected from a tank bottom.	To characterize and document the presence of hazardous constituents in the tank bottom area.	<b>WS-08</b> Normal

## SECTION 4 SOURCE CHARACTERIZATION

The sources of hazardous substances identified at the site are described in this section of the report. Relevant data related to the sources are provided. The related analytical results applicable to the evaluation of the migration and exposure pathways are summarized in the subsequent pathway sections of the report. Potential sources identified and sampled during the ESI include tank bottoms, pits, ponds, and areas of suspected soil contamination.

### 4.1 SOURCES OF CERCLA HAZARDOUS SUBSTANCES

The contaminants found on site may be directly related to crude oil or petroleum products, in which case they may not be addressable under CERCLA because of the petroleum exclusion provisions contained in the law's definition of hazardous waste. However, waste petroleum products that contain higher concentrations of hazardous substances than the virgin product are not considered to be excluded. Also, certain petroleum refining wastes are defined as Resource Conservation and Recovery Act (RCRA) wastes in 40 *Code of Federal Regulations* (CFR) 261.31 and are not excluded. These RCRA wastes include American Petroleum Institute (API) separator sludge, leaded tank bottoms, refinery primary oil/water/solids separation sludge, and refinery secondary (emulsified) oil/water solid separation sludge.

### 4.2 SOURCE DESCRIPTIONS AND ANALYTICAL RESULTS

Sample results from sources are considered significantly above background levels if they exceed three times the maximum background concentration. Samples with concentrations of constituents greater than three times the maximum background levels are provided in Tables 4-1 through 4-8. The source contaminants include semivolatile organic constituents, some volatile organics, and metals such as lead. Contamination at several potential sources has not been documented through sampling, therefore, additional CERCLA-eligible sources may be present on-site. These potential sources include the four ASTs located on the White's property, numerous tank bottom areas, and impoundments. Potential and documented CERCLA-eligible sources at the site are discussed below and are illustrated in Figure 2-2.

#### 4.2.1 Tank Bottoms

Based on the field observations, aerial photographs, and Sanborn maps, at least 11 bermed areas, formerly containing aboveground storage tanks (ASTs), have been identified on-site (References 3, 6, 7, and 11). The ASTs have been cut down and removed, leaving tank residue and bottoms. These areas are shown in Figure 2-2 (Site Plan). Based on aerial photographs, the circular berms measure up to 300 feet in diameter, while the tank bottoms measure up to 150 feet in diameter (Reference 6 and 7). Sanborn maps indicate that tanks in these bermed areas had volumes ranging from 1,000 barrels to 55,000 barrels (Reference 11). Contents listed for the tanks include crude oil, fuel oil, gasoline, naphthene, and kerosene. The Sanborn maps also show many of the tanks surrounded by 3- and 4-foot high berms. Almost all of the aboveground tanks have been removed with the exception of four tanks located on the White's property (western portion of the site) (Reference 7). Most of the berms that formerly contained ASTs have been removed. During sampling activities, it was noted that many of these circular areas contained oily, tarry, and black asphalt-like materials.

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One of the tank bottom areas is adjacent to the Lee residence. A portion of this area is surrounded by a fence and is covered with grass. Seeps of black material were noted in this area, and one waste sample (WS-03) was collected from a seep during ESI activities. Results for sample WS-03 show elevated concentrations of pyrene (54,000 ug/kg) and TPH (293,000 mg/kg).

WESTON also collected two high-concentration waste samples (WS-07 and WS-08) from tank bottom areas located in the eastern portion of the site (Elias' property). Results for both samples showed high TPH (85,700 mg/kg and 23,200 mg/kg, respectively); however, only the results from WS-08 showed any other constituents greater than three times the background concentration. Results for waste sample WS-08 showed cyanide (0.95 mg/kg), manganese (938 mg/kg), selenium (0.47 mg/kg), silver (0.9 mg/kg), and zinc (160 mg/kg).

Since no other constituents besides TPH were detected above background in WS-07, only the tank bottom areas corresponding to WS-03 and WS-08 are considered CERCLA-eligible sources.

#### **4.2.2 Surface Impoundments**

At least four former surface impoundments are located in the central portion of the site (Reference 1). These locations were verified with aerial photographs (References 6 and 7). The total depth and historic use of these ponds and pits is not known.

**Pond 1**—A 1966 aerial photo shows that Pond 1 measured approximately 250 feet by 100 feet and was divided into three rectangular cells by berms. Currently the pond is backfilled and has no berms. Mr. Elias stated he had the berms leveled and the ponds filled in recently because of safety concerns. Oily seeps were observed in this area during the site reconnaissance and sampling visit. Two waste samples (WS-01 and WS-02) were collected from the seeps in this pond. Organic vapor analyzer (OVA) readings greater than 1,000 units above background were detected in the sample hole for WS-01. Constituents detected in the waste samples that were significantly above background include toluene (270 ug/kg), total xylenes (280 ug/kg), and pyrene (230,000 ug/kg). TPH was detected at 494,000 mg/kg.

**Pond 2**—Pond 2 measures approximately 400 feet by 250 feet and is divided by a berm into two cells. The berm in the southwest corner of the pond has been cut, and surface water runoff flows through this breach into a flowing drainage channel that empties into Sand Creek at PPE-2. The pond is vegetated with grasses and brush and contained shallow pond water at the time of sampling. One waste sample (WS-04) was collected from the southwestern portion of this pond, near the breached berm. OVA readings were approximately 1 unit above background at the sample location. Constituents detected significantly above background in the waste sample were a large number of inorganics, including lead (47,000 mg/kg) and copper (42.5 mg/kg). TPH was detected at 1,370 mg/kg.

**Pit**—A 300-foot diameter pit containing black, tarry material was observed during ESI field activities. The southwestern portion of the berm had been cut, and discolored material was noted flowing out of this area. Charred trees and plants were noted in the flow path, possibly indicating a fire had occurred at one time. A waste sample (WS-05) and duplicate waste sample (WS-06) were collected from black material located at the edge of the breached berm. Strong, tar-like odors were noted during sampling, and OVA readings were 60 units above background at the sample location. Both inorganic and

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- Lee Residence—Two soil samples (SS-07, SS-08) were collected from the yard of this property, within 35 feet of the house. Soil sample SS-08 was collected as a field duplicate of SS-07. In addition, a waste sample (WS-03) was collected from black material seeping up in the Lee's yard. According to Mrs. Lee, the black material seeps up in several locations in the yard and between the cracks of their driveway. Historic aerial photos show an impoundment-like feature where the Lee's mobile home currently exists (References 6 and 7). A large, aboveground storage tank and associated bermed area appear in aerial photos on the adjacent land north of the Lee residence.

Acetone (48 ug/kg) was detected above background levels in SS-07, but not in SS-08. Results for waste sample WS-03 were discussed previously under the Tank Bottoms subsection and indicate elevated levels of pyrene and TPH.

### 4.3 SOURCE CHARACTERIZATION CONCLUSIONS

WESTON collected a total of 15 samples (8 high-concentration waste samples plus 7 low-concentration soil samples) to characterize sources at the site. These samples included both characterization and QA/QC samples. Characterization samples collected from sources at the site contain concentrations of a large number of constituents greater than three times background concentrations.

The following conclusions can be drawn from the sample results from the sources:

- Results from soil samples collected from on-site residential yards show elevated concentrations of both organic and inorganic constituents significantly above background levels.
- Results for the waste samples collected from the two tank bottom areas show elevated TPH and other constituents. One tank bottom area showed elevated inorganics, while the other showed elevated pyrene.
- Results for the waste samples collected from the surface impoundments (Ponds 1 and 2, and the Pit) indicate high concentrations of TPH and other constituents. Elevated metals were detected in Pond 2 and the Pit. Elevated organics were detected in Pond 1 and the Pit.
- Former containment features (berms) have been cut or leveled for the impoundments and tank bottom areas; thereby facilitating surface migration of contaminants from the sources.

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organic constituents were detected at concentrations greater than three times the background concentration. These constituents include copper (100 mg/kg), arsenic (8.7 mg/kg), lead (3,660 mg/kg), mercury (0.11 mg/kg), selenium (0.84 mg/kg), 2-methylnaphthalene ( $1.4 \times 10^6$  ug/kg), phenanthrene (520,000 ug/kg), acetone (2,200 ug/kg), and total xylenes (450 ug/kg).

**Lee's Pond**—This pond covers approximately 10,000 square feet and is located southwest of the Lee residence. The intermittent creek (Tributary 1) flows through this pond. The pond also receives runoff from the White and Lee properties. During ESI sampling activities, layers of black asphalt-like material were noted on the edge of the pond. One sediment sample (SED-05) was collected from the edge of the pond. Sample results show copper (2.9 mg/kg) and lead (54 mg/kg) significantly above background concentrations.

#### 4.2.3 Contaminated Soils

Soil samples were collected from four residential properties, the church, and from an unvegetated area located on the White's property. See Tables 4-5 through 4-8 for soil sample results greater than three times the background concentrations. Based on analytical results, contaminated soils occur in the following areas:

- **Church and Sampley Residence**—This area appears to be the location of refinery operations in which storage, processing, loading, and disposal activities have occurred (Reference 1). Since these areas are considered part of the Lorraine Refinery site, they will not be evaluated as sources that are part of the Wilcox site. Church representatives noted that they have frequently encountered old pipelines and other debris when digging on their property (Reference 2). Debris and trash (broken brick, glass, etc.) partially buried in the surface soils of the church property were observed during ESI activities. One soil sample (SS-04) was collected from Pastor Sampley's residential yard; sample results showed lead (116 mg/kg) significantly above background. Two soil samples (SS-12, SS-13) were collected from the yard behind the church. Soil sample SS-13 was collected as a duplicate of sample SS-12. Results for these samples showed lead (260 mg/kg) and mercury (0.09 mg/kg) significantly above background levels.
- **White Residence**—One soil sample (SS-05) was collected from the White yard, approximately 30 feet west of the residence. A large number of constituents were detected in this sample at concentrations greater than three times the background concentrations. These include lead (369 mg/kg), mercury (0.18 mg/kg), zinc (132 mg/kg), benzo(g,h,i)perylene (440 ug/kg), chrysene (690 ug/kg), phenanthrene (790 ug/kg) and pyrene (560 ug/kg) (see Table 4-8).
- **Unvegetated Area**—A bare, unvegetated area of soil, extending approximately 10,000 square feet, exists in the southern part of the White's property (southwest portion of the site). This area was covered by silty sand and a white, salt-like substance. Former use of this area is unknown; aerial photographs from the 1960s, 1970s, 1980s and 1990s show this area as vacant and barren (References 6 and 7). One soil sample (SS-06) was collected from this area. Results from this sample show copper (127 mg/kg) and lead (55,049 mg/kg) significantly above background concentrations.

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**TABLE 4-1**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Waste Sampling Results Above Background Concentrations**

Analyte	Background Concentration		Characterization Sample Concentrations					
	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	WS-04 WS-04 11/20/96 Normal 0.0'-0.5'	WS-05 WS-05 11/20/96 Normal 0.0'-0.5'	WS-05 WS-06 11/20/96 Duplicate 0.0'-0.5'	WS-08 WS-08 11/20/96 Normal 0.0'-0.5'	Left Blank On Purpose
<b>Metals</b>								
Aluminum (mg/kg)	5580	16740		22100	1070	957	9720	
Antimony (mg/kg)	ND	-----		7.7	4 U	3.6 U	4.7 U	
Arsenic (mg/kg)	1.5	4.5		6.5	8.7	2.6	2.8	
Barium (mg/kg)	58.2	174.6		191	44.2	47.4	129	
Beryllium (mg/kg)	0.28	0.84		1.2	0.11	0.1	0.58	
Copper (mg/kg)	5.3	15.9		42.5	100	74.3	13.9	
Cyanide (mg/kg)	ND	-----		2	0.7 U	0.44 U	0.95	
Lead (mg/kg)	26.3	78.9		47000	3660	2260	77.8	
Magnesium (mg/kg)	744	2232		5080	598	290	999	
Manganese (mg/kg)	233	699		701	86.4	36.7	938	
Mercury (mg/kg)	ND	-----		0.07 U	0.11	0.05 U	0.06 U	
Potassium (mg/kg)	961	2883		3300	293	314	1350	
Selenium (mg/kg)	ND	-----		1 U	0.84	0.44	0.47	
Silver (mg/kg)	ND	-----		2	0.67	0.92	0.9	
Vanadium (mg/kg)	11.2	33.6		38.1	10.9	9.7	26.3	
Zinc (mg/kg)	34.8	104.4		127	66.4	51.7	160	

U Not detected at reported quantitation limit.

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

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**TABLE 4-2**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Waste Sampling Results Above Background Concentrations**

Analyte	Background Concentration		Characterization Sample Concentrations					
	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	WS-02 WS-02 11/20/96 Normal 0.0'-0.5'	V/S-05 WS-05 11/20/96 Normal 0.0'-0.5'	WS-05 WS-06 11/20/96 Duplicate 0.0'-0.5'	Left Blank On Purpose	Left Blank On Purpose
<b>Volatile Organics</b>								
Acetone (ug/kg)	ND	-----		130 U	2200	1000		
Toluene (ug/kg)	ND	-----		270	45 J C-BSQL	64 J C-BSQL		
Xylenes (total) (ug/kg)	ND	-----		280	380	450		

U Not detected at reported quantitation limit.

J Estimated value.

C-BSQL Below Sample Quantitation Limit

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

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**TABLE 4-3**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Waste Sampling Results Above Background Concentrations**

Analyte	Background Concentration		Characterization Sample Concentrations					
	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	WS-02 WS-02 11/20/96 Normal 0.0'-0.5'	WS-03 WS-03 11/20/96 Normal 0.0'-0.5'	WS-05 WS-05 11/20/96 Normal 0.0'-0.5'	WS-05 WS-06 11/20/96 Duplicate 0.0'-0.5'	Left Blank On Purpose
<b>Semi-Volatile Organics</b>								
2-Methylnaphthalene (ug/kg)	ND	-----		64000 U	49000 U	1.4E6	760000	
Phenanthrene (ug/kg)	34	102		27000 J C-BSQL	49000 U	520000	370000	
Pyrene (ug/kg)	62	186		230000	54000	230000 J C-BSQL	260000 J C-BSQL	

U Not detected at reported quantitation limit.

J Estimated value.

C-BSQL Below Sample Quantitation Limit

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

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**TABLE 4-4**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Waste Sampling TPH Results Summary of Detections**

Analyte	Characterization Sample Concentrations					
	WS-01 WS-01 Normal 0.0'-0.5'	WS-02 WS-02 Normal 0.0'-0.5'	WS-03 WS-03 Normal 0.0'-0.5'	WS-04 WS-04 Normal 0.0'-0.5'	WS-05 WS-05 Normal 0.0'-0.5'	WS-05 WS-06 Duplicate 0.0'-0.5'
<b>Total Petroleum Hydrocarbons</b>						
Total Petroleum Hydrocarbons (mg/kg)	427000	494000	293000	1370	875000	378000

Detected Values are Shaded

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**TABLE 4-4 (Continued)**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Waste Sampling TPH Results Summary of Detections**

<b>Analyte</b>	<b>Characterization Sample Concentrations</b>					
	<b>WS-07 WS-07 Normal 0.0'-0.5'</b>	<b>WS-08 WS-08 Normal 0.0'-0.5'</b>	<b>Left Blank On Purpose</b>	<b>Left Blank On Purpose</b>	<b>Left Blank On Purpose</b>	<b>Left Blank On Purpose</b>
<b>Total Petroleum Hydrocarbons</b>						
Total Petroleum Hydrocarbons (mg/kg)	85700	23200				

Detected Values are Shaded

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**TABLE 4-5**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Soil Sampling Results Above Background Concentrations**

Analyte	Background Concentration		Characterization Sample Concentrations					
	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SS-04 SS-04 11/18/96 Normal 0.0'-0.5'	SS-05 SS-05 11/18/96 Normal 0.0'-0.5'	SS-06 SS-06 11/18/96 Normal 0.0'-0.5'	SS-12 SS-12 11/18/96 Normal 0.0'-0.5'	SS-12 SS-13 11/18/96 Duplicate 0.0'-0.5'
<b>Metals</b>								
Copper (mg/kg)	5.3	15.9		4.5 L	11.4	127	10.6	11.4
Lead (mg/kg)	26.3	78.9		116 J	369 J	55049 J	251 J	260 J
Mercury (mg/kg)	ND	-----		0.05 U	0.18	0.06 U	0.08 L	0.09 L
Zinc (mg/kg)	34.8	104.4		36.3	132	25.7	70.1	69.7

L Reported concentration is between the IDL and the CRDL.

J Estimated value.

U Not detected at reported quantitation limit.

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

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**TABLE 4-6**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Soil Sampling Results Above Background Concentrations**

Analyte	Background Concentration		Characterization Sample Concentrations					
	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SS-07 SS-07 11/19/96 Normal 0.0'-0.5'	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose
<b>Volatile Organics</b>								
Acetone (ug/kg)	ND	-----		48 J				

J Estimated value.

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

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**TABLE 4-7**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Soil Sampling Results Above Background Concentrations**

Analyte	Background Concentration		Characterization Sample Concentrations					
	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SS-05 SS-05 11/18/96 Normal 0.0'-0.5'	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose
<b>Semi-Volatile Organics</b>								
Benzo(g,h,i)perylene (ug/kg)	ND	-----		440 J				
Chrysene (ug/kg)	50	150		690 J				
Phenanthrene (ug/kg)	34	102		790 J				
Pyrene (ug/kg)	62	186		560 J				

J Estimated value.

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

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## EXPANDED SITE INSPECTION REPORT

WILCOX OIL COMPANY  
BRISTOW, CREEK COUNTY, OK  
EPA CERCLA ID NO. OKD001010917

TABLE 4-8  
SUMMARY OF SOURCE AREAS

SOURCE TYPE	SOURCE NAME	AREA (ft <sup>2</sup> )	CONTAMINANTS
Surface Impoundment	Pond 1	25,000	toluene, xylene, pyrene, TPH
Surface Impoundment	Pond 2	100,000	heavy metals, TPH
Surface Impoundment	Pit	70,686	heavy metals, acetone, xylenes, 2-methylnaphthalene, phenanthrene, TPH
Surface Impoundment	Lee's Pond	10,000	copper, lead
Contaminated Soil	Unvegetated Area	10,000	copper, lead
Contaminated Soil	Lee Residence	22,500	acetone
Contaminated Soil	White Residence	unknown	lead, mercury, zinc, semivolatiles
Contaminated Soil	Tank Bottom (Elias's Property)	12,272	cyanide, manganese, selenium, silver, zinc, TPH
Contaminated Soil	Tank Bottom (Lee's Residence)	12,272	pyrene, TPH

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## SECTION 5 GROUNDWATER PATHWAY

A discussion of the groundwater pathway, one of four pathways of potential hazardous waste migration assessed in this report, is provided in this section. The discussion focuses on the aquifer characteristics of the region, the likelihood of release of hazardous substances to groundwater, and the potential targets of hazardous waste migration through the groundwater pathway.

### 5.1 HYDROGEOLOGIC DESCRIPTION

Regionally, the site is located on an outcrop of the Pennsylvanian-age Barnsdall Formation (Reference 1). Pennsylvanian strata in the area strike north-south, and regional dip is to the west at approximately 30 to 90 feet per mile. Progressively younger strata are encountered from east to west.

The Barnsdall Formation is heterogeneous in character and contains sandstone interbedded with silty and sandy shales (Reference 1). It is capable of producing water and is a bedrock aquifer. However, it is not considered to be a Principal Ground Water Resource by the Oklahoma State Department of Health. The Barnsdall aquifer is unconfined with a shallow water table and is approximately 200 feet thick in the area of the site. The Barnsdall aquifer is used primarily by private wells in the area as a source of drinking water.

The other aquifer in the site area is the Vamoosa-Ada aquifer, located west of the site. Most nearby public supply wells produce from this aquifer. This aquifer includes (from youngest to oldest) the following Pennsylvanian-age formations (Reference 1):

- Lower Vanoos
- Ada
- Vamoosa
- Tallant
- Uppermost Barnsdall

The Vamoosa-Ada strata crop out in the western one-third to one-half of Creek County and are predominantly composed of red and brown coarse- to fine-grain, well-sorted sandstones interbedded with dark red sandy to silty shale (Reference 1). The Tallant Formation consists of 10 to 60 feet of fine- to medium-grained sandstone, overlain by 25 to 65 feet of shale (Reference 13). Total thickness of the Tallant Formation ranges from 0 to 100 feet. Maps from the Oklahoma State Department of Health indicate that the site is located within a potential recharge area for the Vamoosa-Ada aquifer (Reference 13). However, the Tallant Formation may act as a confining unit between the uppermost Barnsdall and the overlying Vamoosa-Ada aquifer, west of the site (Reference 13).

## **5.2 LIKELIHOOD OF RELEASE**

Important factors related to the likelihood of a release from source hazardous substances at the site to groundwater are presented in this section. Relevant analytical data for the pathway are provided.

### **5.2.1 Depth to Groundwater**

The depth to the shallowest water-bearing unit is reportedly less than 25 feet (Reference 1). However, a depth of 60 feet was reported for the first water-saturated sandstone in a domestic water well located less than ¼ mile north of the site.

### **5.2.2 Depth of Contamination**

Based on samples collected from the on-site sources as part of the ESI field activities, the maximum depth of known contamination is ½ foot bgs. Because subsurface sampling was not conducted as part of this ESI, the actual depth of contamination is not known.

### **5.2.3 Net Precipitation**

Net precipitation is equivalent to total annual precipitation less potential evapotranspiration. The net precipitation for the vicinity of the site using the Thornthwaite method is approximately 8.91 inches per year (Reference 14).

### **5.2.4 Thickness of Impermeable Layers**

An impermeable confining layer is not present between sources at the site and groundwater in the Barnsdall formation (Reference 1). Nor has it been demonstrated that there is an impermeable layer between the Barnsdall and younger formations in the Vamoosa-Ada aquifer.

### **5.2.5 Hydraulic Conductivity of Impermeable Layer**

An impermeable layer does not exist between the surface and groundwater; therefore, a hydraulic conductivity value cannot be assigned.

### **5.2.6 Analytical Results from Previous Investigations**

No previous groundwater analytical results from previous investigations are known to exist.

### **5.2.7 ESI Groundwater Sampling and Analytical Results**

No groundwater sampling was conducted as part of this ESI.



### **5.3 GROUNDWATER PATHWAY TARGETS**

The potential receptors, or targets, of the groundwater pathway include the population and resources that rely on local aquifers as a source of water supply. The targets identified for the groundwater pathway are discussed in the following sections.

#### **5.3.1 Nearest Well**

The nearest identified active well to the site is a private well, located ¼ mile north of the site (Reference 1). It is 230 feet deep and produces water from sandstones in the lower part of the Barnsdall Formation. The nearest active public supply well is located almost 1 mile southwest of the site and produces from the Vamoosa-Ada aquifer. It should be noted that these wells were not sampled during this ESI; it is WESTON's understanding that groundwater sampling will be conducted as part of other site investigations led by ODEQ.

Water wells on the First Assembly of God Church property and on the White's property have been abandoned because of oil contamination (Reference 1). The White well is approximately 200 feet deep and is plugged. Oily contamination reportedly came from perforations in shallow sand intervals. The church well is 110 feet deep, but is screened at 40 feet in the shallow water zone. The Whites currently have a water line from the City of Bristow, and they sell water to the Sampley residence, Lee residence, and First Assembly of God Church (References 1 and 3).

#### **5.3.2 Other Nearby Wells**

There are 8 active drinking water wells for the City of Bristow located within 4 miles of the site (Reference 1). According to information provided by the ODEQ Water Quality Division, these wells produce from the Vamoosa and Vamoosa-Ada aquifers (Reference 15). In addition, a public supply well that serves 50 residents of the Evergreen Trailer Park is located within a 1- to 2-mile radius of the site. The nearest active public supply well (City of Bristow Well #14) is approximately 1 mile southwest of the site. Residences to the north of the refinery road reportedly receive drinking water from private wells, but the exact number and locations of these wells is unknown (Reference 2). A summary by distance interval of nearby identified active water wells is provided in Table 5-1.

It should be noted that a public supply well (City of Bristow Well #15) located approximately ½ mile southwest of the site was plugged and abandoned because of diesel contamination following a train derailment (Reference 15).

#### **5.3.3 Well Head Protection Areas**

No well head protection areas exist within a 4-mile radius of the site (Reference 1).

#### **5.3.4 Groundwater Resources**

Resources associated with the groundwater pathway may include irrigation, watering of commercial livestock, commercial food preparation, commercial aquaculture, and water recreation.

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Groundwater within the vicinity of the site is used for irrigation and watering of commercial livestock (Reference 1).

#### **5.4 GROUNDWATER PATHWAY CONCLUSIONS**

A release of site-attributable contamination to the groundwater pathway is of major concern because of the following:

- The site is located on an outcrop of the Barnsdall Formation. The Barnsdall aquifer is used by private wells in the area. Oily contamination has been observed in the shallow groundwater zone in abandoned on-site residential wells. Most of the known active private wells are located at distances greater than 1 mile and topographically upgradient from the site. However, there may be unidentified private wells in the area.
- 
- The site is located in a potential recharge zone for the Vamoosa-Ada aquifer, the principle aquifer for the City of Bristow public supply wells. However, the Tarrant formation may act as an upper confining unit between the Barnsdall and Vamoosa-Ada aquifers.
- Attribution of contamination to the site may be difficult because of potential contamination associated with the surrounding oil refineries to the north and west. In addition, diesel contamination of groundwater resulting from a train derailment occurs between the site and public supply wells.

WESTON did not perform groundwater sampling as part of this ESI at the request of EPA. It is WESTON's understanding that area groundwater sampling will be performed by ODEQ as part of investigations at adjacent refinery sites.

## EXPANDED SITE INSPECTION REPORT

WILCOX OIL COMPANY  
BRISTOW, CREEK COUNTY, OK  
EPA CERCLA ID NO. OKD001010917

TABLE 5-1  
SUMMARY OF POPULATION SERVED BY ACTIVE WELLS

DISTANCE FROM SITE (miles)	NUMBER OF PRIVATE WELLS	NUMBER OF PUBLIC WELLS	ESTIMATED POPULATION <sup>1</sup>
0 - 1/4	1	0	3
1/4 - 1/2	0	0	0
1/2 - 1	4	1	176
1 - 2	25	8	4,368
2 - 3	20	0	54
3 - 4	29	0	78
Total	79	9	4,679

Notes:

1. Population has been rounded to nearest whole number.

Source: ODEQ 1994 PA, Reference 1.

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## SECTION 6 SURFACE WATER PATHWAY

Surface water is the second of four pathways of potential hazardous waste migration assessed for the site. A discussion of the types of surface water draining the site, the probable point of entry (PPE) for a hazardous substance from the site to enter surface water, the likelihood of a release, and the potential targets of the pathway are discussed in this section.

### 6.1 HYDROLOGIC SETTING

Regionally, surface water from the Wilcox site flows into the Little Deep Fork drainage basin.

Surface water at the site flows through an overland flow segment, enters the surface water at the PPE in Sand Creek, and flows downstream to the Little Deep Fork Creek. These segments of the surface water pathway are discussed in the following sections.

#### 6.1.1 Overland Flow Segment

Based on available information and USGS topographic maps, drainage from the site flows south and east into two intermittent creeks. The western intermittent creek (Tributary 1) flows from the north, across the White's property and through the Lee's pond. The creek then enters Sand Creek approximately 100 feet south of the site. This creek receives runoff from the north, from the former Wilcox refinery, and from western portions of the former tank farm. The eastern intermittent creek (Tributary 2) receives runoff from the eastern portions of the tank farm. This creek flows approximately 0.4 mile south before reaching Sand Creek. Additionally, there is a small intermittent drainage that connects a pond in the southcentral area of the site with Sand Creek.

#### 6.1.2 Probable Point of Entry

Three PPEs for a release of hazardous substances from the site into perennial surface water bodies have been identified. These PPEs (PPE-1, PPE-2, and PPE-3) occur where on-site intermittent creek flow into Sand Creek. These locations are identified in Figure 6-1.

#### 6.1.3 Surface Water Flow Path

Runoff from the Wilcox site flows south into Sand Creek through PPEs 1, 2, and 3 (References 1 and 2). Sand Creek flows southeast and discharges into the Little Deep Fork Creek approximately 3.5 miles downstream of the PPE-1 (Reference 16). Flow continues in Little Deep Fork Creek for the remaining 11.5 miles of the site surface water pathway.

The surface water pathway is illustrated in Figure 6-1; stream segments and streamflow data are summarized in Table 6-1.

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## **6.2 LIKELIHOOD OF RELEASE**

Important factors related to the likelihood of a release from a source of hazardous substances at the site to surface water are presented in the following section. Relevant analytical data for the surface water pathway are provided as evidence of a release.

### **6.2.1 Distance to Surface Water**

Based on observations made during WESTON's field sampling activities, the shortest distance from a known or potential source of hazardous substances at the site to surface water is approximately 400 feet. This distance was determined from a topographic map by measuring from the unvegetated area on the White's property to Sand Creek through the intermittent creek (Reference 3). The distance measured between Pond 2 and Sand Creek is also approximately 400 feet.

### **6.2.2 Flood Frequency**

According to flood hazard maps obtained from the Federal Emergency Management Agency (FEMA), portions of the site are in the 100-year flood zone (Reference 17).

### **6.2.3 2-Year, 24-Hour Rainfall**

The 2-year, 24-hour rainfall for the area of the site is approximately 4.25 inches (Reference 18).

### **6.2.4 Flood Containment**

Based on a review of topographic maps and aerial photographs, in addition to observations made during WESTON's field sampling activities, sources at the site have either limited or no containment features for floods. Although berms surround some of the sources at the site, many of the original berms have either been leveled or cut to allow drainage from the sources to run off.

### **6.2.5 Analytical Results from Previous Investigations**

No analytical results exist from previous investigations.

### **6.2.6 ESI Sediment Sampling and Analytical Results**

WESTON collected 10 sediment samples (SED-01 through SED-10) from surface water bodies receiving drainage from the site in an effort to determine if a release of hazardous substances from sources at the site has occurred. One of these samples (SED-07) was a duplicate sample collected for QA/QC purposes. WESTON collected two background samples (SED-01, SED-02) from locations on Sand Creek upstream of the PPEs. Two samples (SED-03, SED-04) were collected to evaluate potential contaminated runoff coming from the former refineries located west and north of the site. Sediment sample SED-03 was collected from Sand Creek, just east of the S.H. 66 bridge, where runoff from the former Lorraine refinery would enter the creek. Sediment sample SED-04 was collected from

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Tributary 1, just north of the refinery road, where runoff from refineries to the north would enter the site. In all cases, the sediment samples were collected from depths ranging from 0 to 6 inches bgs.

Laboratory analytical results for the sediment samples document a release of copper and lead from the site to Sand Creek. These constituents were detected on site, at and downstream of the PPEs in Sand Creek. Sediment sample analytical results significantly above background concentrations are presented in Table 6-2.

### **6.3 SURFACE WATER PATHWAY TARGETS**

The potential targets of the surface water pathway include the population relying on surface water downstream of the PPE as a source of drinking water, as well as downstream fisheries, sensitive environments, and surface water resources. The targets of the surface water pathway are discussed in the following subsections.

#### **6.3.1 Drinking Water Intakes**

According to a representative with the ODEQ Water Quality Division, no drinking water intakes exist in the watershed located in Creek County (which includes Sand Creek and Little Deep Fork Creek) (Reference 19). All drinking water is obtained from groundwater sources.

#### **6.3.2 Wetlands and Other Sensitive Environments**

Surface water pathway targets include fisheries, drinking water intakes, sensitive environments, and resources that rely on surface water.

Habitats for endangered and threatened species are known to occur in Creek County; however, no sightings or habitats for those species have been observed or reported for the site (Reference 1). A list of endangered and threatened species are in Table 6-3.

WESTON obtained U.S. Fish and Wildlife National Wetlands Inventory (NWI) maps in order to identify wetland areas along the surface water pathway (Reference 20). According to the wetlands maps, small wetland frontages are present along the surface water pathway downstream of the site. The wetlands are summarized in Table 6-4.

#### **6.3.3 Fisheries**

According to an official with the Oklahoma Fish and Wildlife office, Sand Creek and Little Deep Fork Creek may be used for limited private fishing (Reference 21). These creeks may therefore be considered fisheries. According to the State of Oklahoma, Sand Creek is considered to be in the "habitat limited aquatic community" subcategory of the fish and wildlife propagation beneficial use category and within the primary body contact subcategory for recreational beneficial use category (Reference 1). The Little Deep Fork Creek is placed in the "warm water aquatic community" subcategory of the fish and wildlife propagation beneficial use and within the "primary body contact" subcategory for recreational beneficial use.

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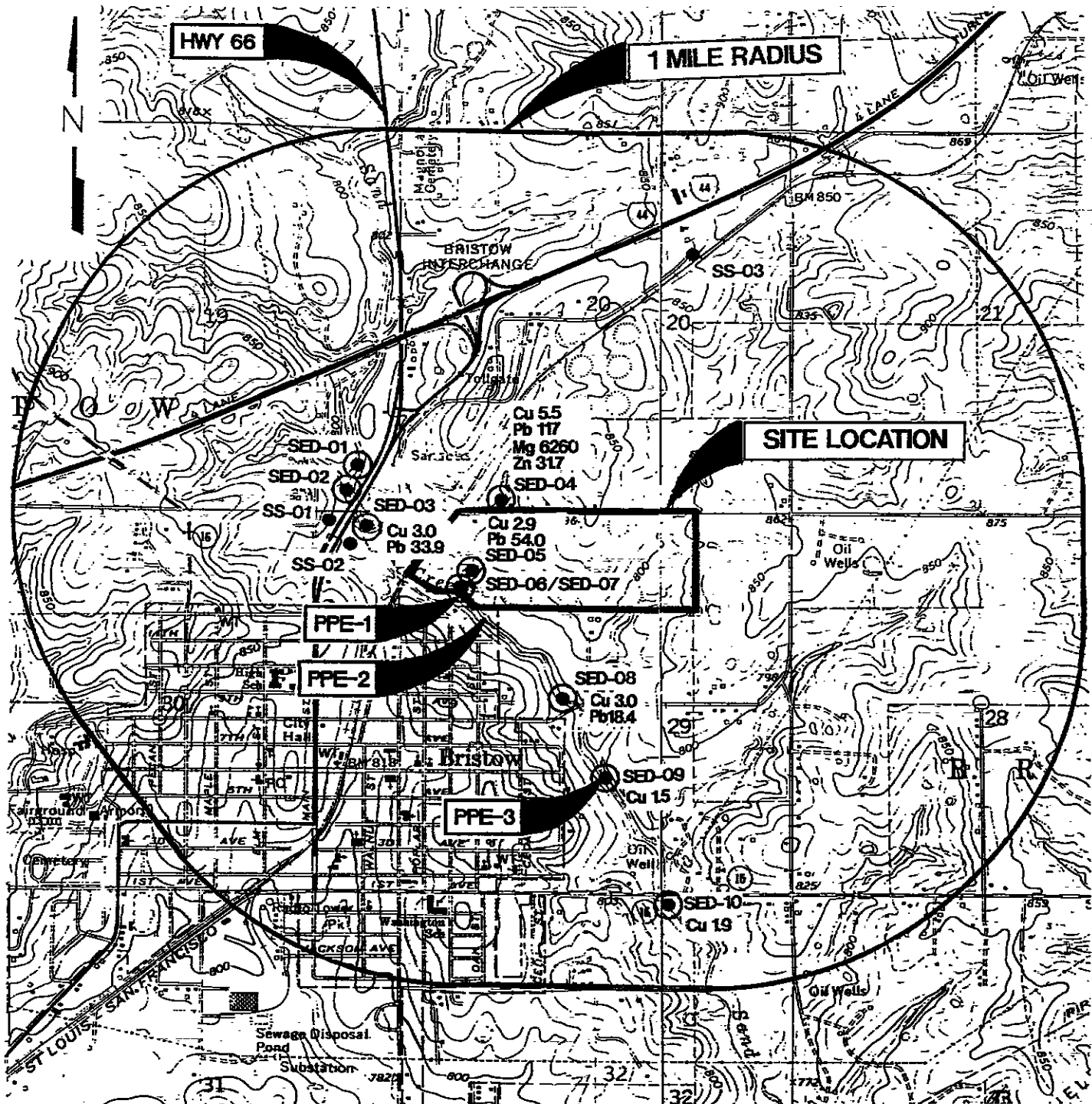
#### 6.3.4 Resources

Resources associated with the surface water pathway may include irrigation, watering of commercial livestock, commercial food preparation, commercial aquaculture, and water recreation. No resources have been identified for the site surface water pathway.

#### 6.4 SURFACE WATER PATHWAY CONCLUSIONS

WESTON collected a total of 10 sediment samples from surface water bodies in an effort to establish background levels and to determine if a release of on-site hazardous substances to the surface water pathway has occurred. The following conclusions can be drawn from the data from these samples:

- Based on the ESI sampling data, a release of copper and lead to Sand Creek has been documented. These substances were also found in on-site sources as described in Section 4.
- Wetland frontages occur along segments of Sand Creek and Little Deep Fork Creek, beginning approximately 2.5 miles downstream of the location of sediment sample SED-10, the most downstream documented point of contamination. Sand Creek and the Little Deep Fork Creek are considered recreational fisheries.
- No habitats for endangered species or drinking water intakes have been documented within the 15-mile target distance limit for the site.



**NOTES:** 1. Cu = COPPER, Pb = LEAD, Mg = MAGNESIUM, Zn = ZINC  
2. RESULTS ARE IN mg/kg



BASE MAP FROM:  
U.S. DEPT. OF THE INTERIOR  
GEOLOGICAL SURVEY  
BRISTOW QUADRANGLE  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
1973 SERIES

### LEGEND

- SED-01  
SEDIMENT SAMPLE LOCATION
- SS-01  
SOIL SAMPLE LOCATION

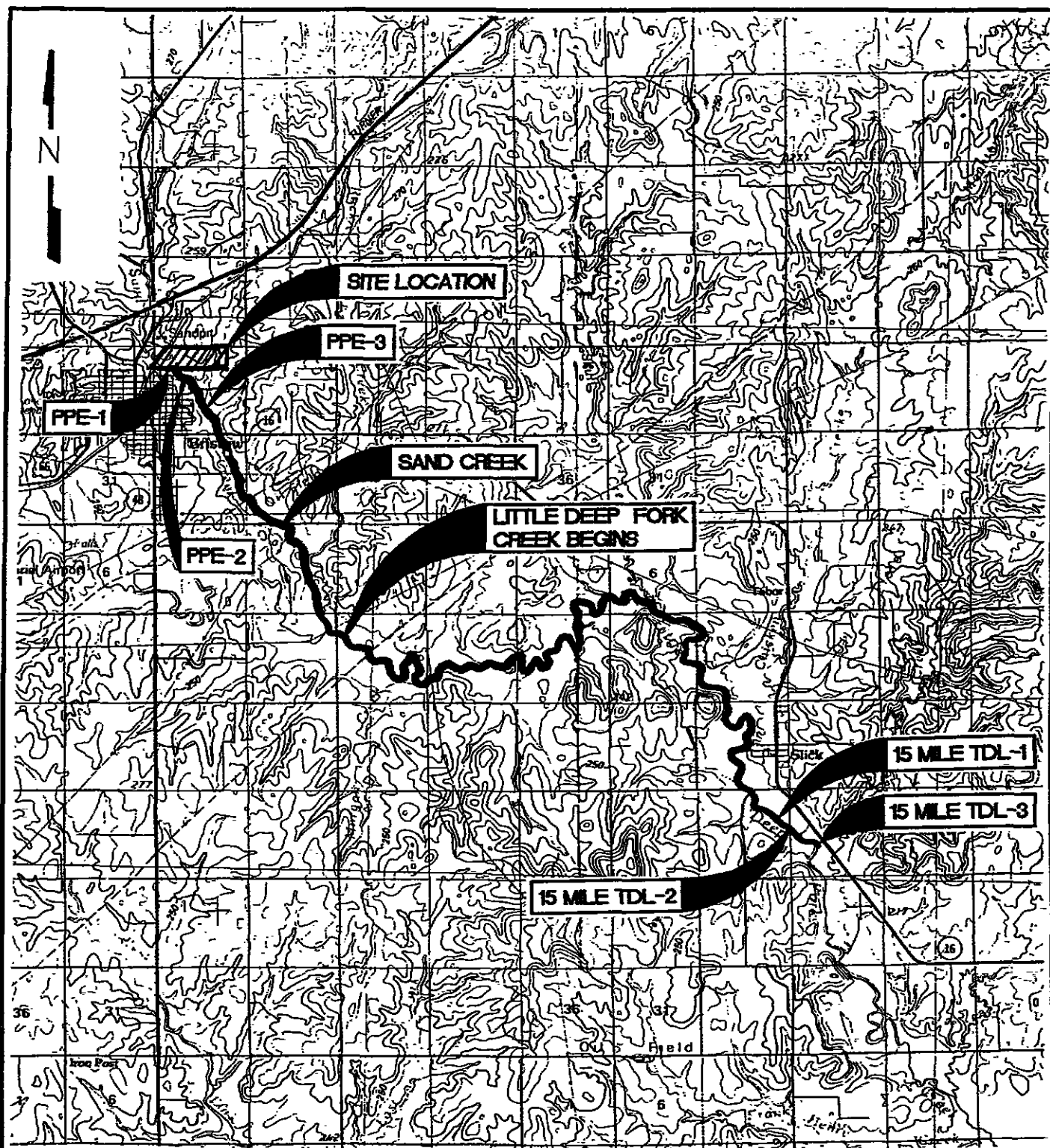
0 1000 2000  
SCALE IN FEET

**WESTON**  
ENGINEERS/CONSULTANTS

**FIGURE 6-2**  
**SEDIMENT SAMPLE**  
**STATIONS AND RESULTS**  
WILCOX OIL COMPANY  
BRISTOW, OKLAHOMA  
CERCLA ID NO.: OKD001010917

EPA REGION VI  
ARCS EXPANDED SITE INSPECTION  
W.O. NO.: 04606-056-026-0600





BASE MAP FROM:  
U.S. DEPT. OF THE INTERIOR  
GEOLOGICAL SURVEY  
BRISTOW, OKLAHOMA  
30 x 60 MINUTE SERIES (TOPOGRAPHIC)  
1983 SERIES  
SCALE 1:100,000

0 5000 10,000  
SCALE IN FEET

**WESTON**  
ENGINEERING CONSULTANTS

# **FIGURE 6-1 SURFACE WATER PATHWAY MAP**

WILCOX OIL COMPANY  
BRISTOW, OKLAHOMA  
CERCLA ID NO.: OKD001010917

EPA REGION VI  
ARCS EXPANDED SITE INSPECTION  
W.O. NO.: 04606-056-026-0600

# EXPANDED SITE INSPECTION REPORT

WILCOX OIL COMPANY  
BRISTOW, CREEK COUNTY, OK  
EPA CERCLA ID NO. OKD001010917

TABLE 6-1  
SURFACE WATER PATHWAY SUMMARY

SEGMENT NAME	SEGMENT LENGTH (miles)			EST. AVERAGE
	PATHWAY 1	PATHWAY 2	PATHWAY 3	FLOW RATE
Sand Creek	3.5	3.4	2.9	50 cfs <sup>1,2</sup>
Little Deep Fork	11.5	11.5	12.1	400 cfs

Notes:

1. cfs = cubic feet per second
2. Source: Reference 1

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**TABLE 6-2**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sediment Sampling Results Above Background Concentrations**

Analyte	Background Concentration		Characterization Sample Concentrations					
	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SED-03 SED-03 11/18/96 Normal 0.0'-0.5'	SED-04 SED-04 11/18/96 Normal 0.0'-0.5'	SED-05 SED-05 11/19/96 Normal 0.0'-0.5'	SED-08 SED-08 11/19/96 Normal 0.0'-0.5'	SED-09 SED-09 11/19/96 Normal 0.0'-0.5'
<b>Metals</b>								
Copper (mg/kg)	ND	-----		3 LJ <sup>a</sup>	5.5 L	2.9 L	3 L	1.5 L
Lead (mg/kg)	6	18		33.9 J	117 J	54 J	18.4 J	4.6 J
Magnesium (mg/kg)	333	999		425 L	6260	317 L	465 L	228 L
Zinc (mg/kg)	7.6	22.8		11.6	31.7	11.6	21.7	6 UC

L Reported concentration is between the IDL and the CRDL.

J Estimated value.

UC Not detected at the reported quantitation limit which was raised due to apparent blank contamination.

LJ<sup>a</sup> Reported concentration is between the IDL and the CRDL. Estimated value.

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

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WILCOX OIL COMPANY  
BRISTOW, CREEK COUNTY, OK  
EPA CERCLA ID NO. OKD001010917

TABLE 6-3  
ENDANGERED AND THREATENED SPECIES  
CREEK COUNTY, OKLAHOMA

SPECIES	FEDERAL STATUS
Bald Eagle	Endangered
Interior least tern	Endangered
Peregrine falcon	Endangered
Piping plover	Threatened
Cerulean warbler	Category 2 Candidate <sup>1</sup>
Loggerhead shrike	Category 2 Candidate
Prairie mole cricket	Category 2 Candidate
Arkansas River speckled chub	Category 2 Candidate
Texas horned lizard	Category 2 Candidate
Western Snowy plover	Category 2 Candidate
Fissa sedge (Carex fissa)	Category 2 Candidate

Notes:

1. Category 2 - Species needs additional study to determine whether it should be listed as Endangered or Threatened.
2. Source: Reference 1

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**TABLE 6-2 (Continued)**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sediment Sampling Results Above Background Concentrations**

Analyte	Background Concentration		Characterization Sample Concentrations					
	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SED-10 SED-10 11/19/96 Normal 0.0'-0.5'	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose
<b>Metals</b>								
Copper (mg/kg)	ND	-----		1.9 L				
Lead (mg/kg)	6	18		15 Jv				
Magnesium (mg/kg)	333	999		254 L				
Zinc (mg/kg)	7.6	22.8		8.7				

L Reported concentration is between the IDL and the CRDL.

Jv Estimated value and low biased. Actual concentration may be higher than the concentration reported.

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

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## EXPANDED SITE INSPECTION REPORT

WILCOX OIL COMPANY  
BRISTOW, CREEK COUNTY, OK  
EPA CERCLA ID NO. OKD001010917

TABLE 6-4  
SUMMARY OF WETLANDS

STREAM SEGMENT	WETLANDS TYPE <sup>1</sup>	DISTANCE FROM A PPE TO NEAREST WETLANDS FRONTAGE	TOTAL WETLANDS FRONTAGE
Sand Creek	PF01A	PPE-3: 3.0 miles	0.25 mile
Little Deep Fork Creek	PF01A	PPE-3: 3.0 miles	8.5 miles

Notes:

1. PF01A - Palustrine Forested, Broad-Leaved Deciduous, Temporarily Flooded
2. Source: Reference 20

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## SECTION 7 SOIL EXPOSURE

Soil exposure is another potential route of exposure to hazardous substances attributable to the site. The discussion in this section focuses on the important soil exposure factors such as soil type, area of contamination, accessibility and the likelihood of exposure, and the potential targets.

### 7.1 SURFICIAL CONDITIONS

Information regarding the surficial conditions at the site is summarized in this section.

#### 7.1.1 Soil Type

Based on the soil survey for Creek County, the site contains several soil series: the Stephenville and Darnell fine sandy loams, sloping and gently sloping; the Verdigris silt loam; and Oil-waste Land (Reference 22). Soils are described by the soil survey as follows:

- The Stephenville and Darnell fine sandy loams cover the majority of the site. These soils consist of shallow to moderately deep upland soils developed over reddish-yellow to red sandstone or interbedded sandstone and sandy shale. Runoff is slow to moderate, but internal drainage is moderate to rapid.
- The Verdigris silt loam is located in the southwestern portion of the site, along Sand Creek. These soils occupy the flood plains of streams and are moderately well drained; however, they are flooded occasionally to frequently. Parent material consists of slightly acid to weakly alkaline alluvial sediments washed from soils of the prairies.
- Oil-waste Land has been mapped in areas throughout the site, occurring in tank farm and refinery equipment areas. The areas mapped in this miscellaneous land type have been practically ruined for agricultural use by oil and salt-water waste from oil wells. They are more or less gullied and eroded and are almost barren of vegetation. They range in size from one acre to several acres.

The Stephenville and Darnell fine sandy loam series and the Verdigris silt loam are the soils most likely associated with the site prior to being impacted by oil field activities (Reference 1).

#### 7.1.2 Areas of Contamination

Based on the analytical results described in Section 4, several on-site areas of contaminated soils were identified. Refer to Section 4 for a discussion on characterization of contaminated soils as a source.

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## **7.2 LIKELIHOOD OF RELEASE**

Important factors related to the likelihood of exposure to an area of contaminated soil at the site are presented in the following subsections.

### **7.2.1 Attractiveness of the Site**

Sources at the site are located in a pasture that is not used for public recreation and, therefore, has a low attractiveness.

### **7.2.2 Site Accessibility**

The site is fenced and access is restricted. However, Mr. Elias stated that children frequent his property despite the presence of fences and verbal warnings. The children have reportedly played in and around the pit and ponds, and Mr. Elias expressed a great deal of concern about children falling into the ponds (Reference 2).

### **7.2.3 Soil Analytical Results from Previous Investigations**

Based on file information provided to WESTON by EPA, no soil sampling has been conducted as part of previous investigations.

### **7.2.4 ESI Soil Sampling and Analytical Results**

As discussed in Sections 3 and 4, 11 soil samples (SS-01 through SS-08, SS-11 through SS-13) were collected in an effort to characterize and document the presence of hazardous substances in soils at the site. Two samples (SS-08, SS-13) were collected as field duplicates for quality assurance/quality control (QA/QC) purposes. In addition, three soil samples (SS-01 through SS-03) were collected from off-site locations to establish background concentrations of constituents. The background samples were collected from the same soil series as the site and in areas that appeared to be undisturbed. In all cases, the soil samples were collected from depths ranging from 0 to 6 inches bgs. The ESI sample locations are shown in Figures 3-1 and 3-2 following the text of Section 3. Analytical results from the ESI sampling investigation are presented in Table 4-4 of Section 4. The area of contaminated soils associated with residences could not be determined based on one or two sample locations. Estimates of areas were made using aerial photographs when possible; these estimated areas are presented in Table 4-9.

## **7.3 SOIL EXPOSURE TARGETS**

The resident population living or working in an area of soil contamination, the population living near areas of soil contamination, designated recreational areas, and terrestrial resources such as agriculture are potential targets of soil exposure. The soil exposure targets identified are summarized in the following sections.

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### **7.3.1 Resident Population**

The resident population is defined as those persons living or attending school or day care on a property where site-attributable soil contamination has been documented and whose residence, school, or day care center is within 200 feet of that contamination. Based on the ESI sampling results, a resident population of five has been documented for the Wilcox site. This population includes the two people living in the White residence and the three people living in the Lee residence (References 3 and 9).

### **7.3.2 Worker Population**

The worker population is defined as those persons working on a property with an area of site-related sources or soil contamination and whose workplace area is on or within 200 feet of the areas of documented soil contamination.

No workers have workplace areas within 200 feet of the areas of documented soil contamination at the Wilcox site.

### **7.3.3 Nearby Population**

The nearby population includes those persons who live within one mile of areas of soil contamination attributable to the site. Those persons in houses, schools, or day care facilities within one mile of the site have been considered part of the nearby population. The nearby population was estimated using the EPA Geographic Exposure Modeling System (GEMS) database, 1990 Census information, and a house count conducted during the 1994 PA (Reference 1). The population distribution around the site is summarized in Table 7-1.

### **7.3.4 Sensitive Environments**

Terrestrial sensitive environments include national parks and preserves, federal wilderness areas, terrestrial habitats for federal- and state-designated endangered or threatened species, and other national- and state-designated areas important to the maintenance of unique biotic communities. No terrestrial sensitive environments were identified within areas of soil contamination.

### **7.3.5 Resources**

Resources associated with the soil exposure pathway may include commercial agriculture, commercial silviculture, commercial livestock production or grazing, and major or designated recreational areas. No resources have been identified in areas of observed contamination.

## **7.4 SOIL EXPOSURE CONCLUSIONS**

WESTON collected a total of 11 soil samples from various areas on site and from off-site locations in order to characterize contaminant levels in site soils. The following conclusions can be drawn from the soil data from these samples:

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- As discussed in Section 4, a number of areas at the Wilcox site were identified as areas of soil having concentrations of site-related constituents at concentrations greater than three times maximum background levels. Both inorganic and organic constituents were detected; these include TPH, lead, mercury, zinc, acetone, and semivolatile organics.
- The area of contaminated soils associated with residences could not be adequately determined based on the one or two sample locations; however, the presence of hazardous substances has been established and determined to be attributable to the site.
- Five people live in areas of soil contamination related to the Wilcox site. A nearby population has been established for the site. No resources or terrestrial sensitive environments have been identified for the site.
- The areas of soil contamination occur in fenced sections of the site (corresponding to property divisions). However, children frequently trespass in the eastern portion of the site, where areas of contaminated soil and wastes exist. These areas may therefore pose a potential threat to human health.

## EXPANDED SITE INSPECTION REPORT

WILCOX OIL COMPANY  
BRISTOW, CREEK COUNTY, OK  
EPA CERCLA ID NO. OKD001010917

TABLE 7-1  
NEARBY POPULATION

DISTANCE INTERVAL (miles)	ESTIMATED POPULATION	REFERENCE
On-Site	5	1, 2
0 to ¼	57	1, 2
¼ to ½	495	1
½ to 1	1,836	1

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## SECTION 8 AIR PATHWAY

The discussion in this section of the report focuses on the air pathway, another potential route of hazardous substance migration from the site. Atmospheric conditions, the likelihood of release to air, and potential air pathway targets are identified below.

### 8.1 METEOROLOGICAL INFORMATION

The prevailing wind direction changes seasonally; wind roses are provided in Reference 23. Information concerning rainfall in the region is presented in Subsection 5.2.3 of this report.

### 8.2 LIKELIHOOD OF RELEASE

Information concerning the likelihood of a release to the air pathway is presented in this subsection.

#### 8.2.1 Air Sampling Results from Previous Investigations

No analytical data for the air pathway are known to exist.

#### 8.2.2 ESI Air Quality Sampling and Analytical Results

Quantitative air sampling was not completed as part of the ESI. However, WESTON did perform air monitoring of the breathing zone during the site reconnaissance and sampling visit using an organic vapor analyzer (OVA) and miniature Realtime Aerosol Meter (mini-RAM). The mini-RAM was used to monitor for particulate concentrations in the air. Conditions requiring an upgrade in the level of personal protective equipment were not encountered by the field team. No sustained particulate concentrations or organic vapor readings above background levels were encountered in the breathing zone during site activities (Reference 1). However, elevated OVA readings were detected in sample holes where wastes were disturbed.

### 8.3 AIR PATHWAY TARGETS

The population, resources, and sensitive environments within 4 miles of the site are potential targets of a release of hazardous constituents to the air pathway. The targets identified for the air pathway are discussed in the following sections.

#### 8.3.1 Population Within 4 Miles

Using GEMS, 1990 Census data, and a house count performed during the 1994 PA, the population residing within approximately 4 miles of the site was estimated (Reference 1). This population is summarized in Table 8-1.

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### **8.3.2 Sensitive Environments**

No sensitive environments have been identified on-site (Reference 1).

### **8.3.3 Resources**

Resources associated with the air migration pathway may include commercial agriculture, commercial silviculture, and major or designated recreational areas within 1/2 mile of a source at the site. No resources have been identified on or near the site (Reference 1).

## **8.4 AIR PATHWAY CONCLUSIONS**

No releases of hazardous substances to the air pathway have been documented and the site is inactive. The nearby population is small. However, a release to the air pathway is of some concern since numerous sources exist on site, five people live near documented areas of soil contamination, and trespassing children have been seen playing in and near areas of documented contamination.

## EXPANDED SITE INSPECTION REPORT

WILCOX OIL COMPANY  
BRISTOW, CREEK COUNTY, OK  
EPA CERCLA ID NO. OKD001010917

TABLE 8-1  
POPULATION WITHIN 4 MILES

DISTANCE INTERVAL (miles)	ESTIMATED POPULATION	REFFRENCES
On-Site	5	2, 11
0 to ¼	57	1, 2, 11
¼ to ½	495	1
½ to 1	1,836	1
1 to 2	2,691	1
2 to 3	1,017	1
3 to 4	517	1

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## SECTION 9 CONCLUSIONS

The Wilcox site is located on the north side of the City of Bristow, Creek County, Oklahoma. The site covers approximately 98 acres and is the location of an inactive oil refinery and tank farm. Refining began at the site during the 1920s and ended in the 1960s. The site is also bordered on the northwest and west by former refineries. The site includes remnants of an inactive refinery, pits, ponds, and a number of circular berms that surround tank bottoms. High concentrations of metals, volatile and semivolatile organic compounds, and TPH have been detected in on-site sources.

Concerns associated with the migration and exposure pathways are summarized as follows:

- As discussed in Section 5, a release to the groundwater pathway has not been documented but is of major concern. No groundwater samples were collected as part of this ESI. The population immediately north of the site are on private wells that produce from a shallow aquifer. In addition, the site overlies a potential recharge zone for an aquifer that is used for public drinking water supply.
- As discussed in Section 6, a release to the surface water pathway has been documented. Elevated levels of copper and lead have been detected in sediment samples collected from Sand Creek. Sand Creek and Little Deep Fork Creek are used for limited recreational fishing. Downstream of documented contamination are wetlands frontages in Sand Creek and Little Deep Fork Creek.
- As discussed in Section 7, elevated concentrations of inorganic and organic constituents have been documented in the surface soils on-site. A resident population of five has been established for the site. Although the site is not used for recreational activities, children frequently trespass in areas of soil contamination. No one works on the site.
- As discussed in Section 8, a release to the air pathway has not been documented. The site is inactive and the nearby population is low. However, five people live on-site near sources of hazardous substances, and children frequently trespass in areas of documented contamination.

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## SECTION 10 REFERENCES

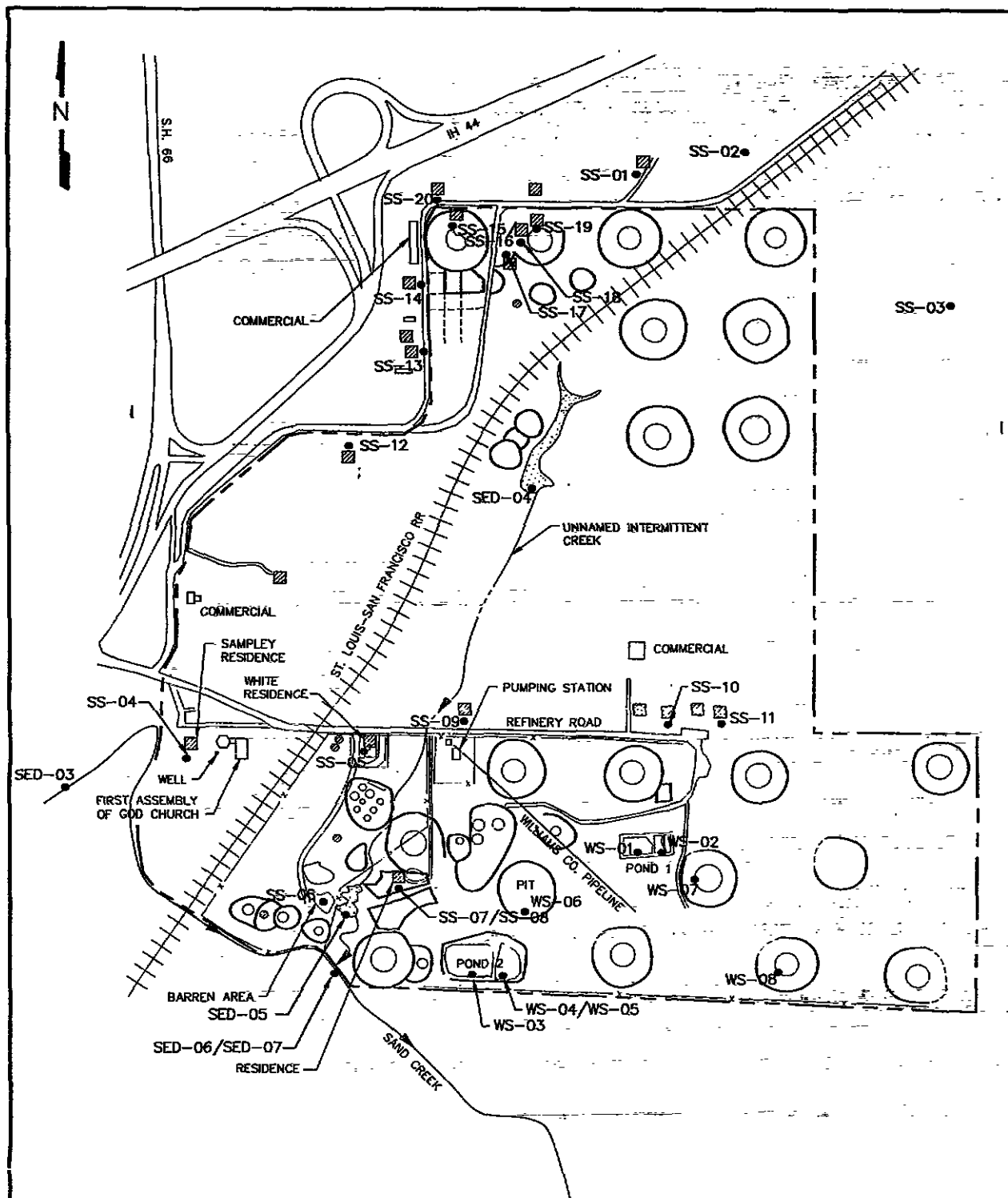
1. State of Oklahoma, Department of Environmental Quality (ODEQ). 1994. Preliminary Assessment of the Wilcox Oil Company, Bristow, Creek County, Oklahoma. 15 December 1994.
2. WESTON (Roy F. Weston, Inc.). 1996. Field Logbook Notes for the Wilcox Oil Company site. 16 August 1996; 18-20 November 1996.
3. USGS (U.S. Geological Survey). 1973. Bristow Quadrangle, Oklahoma (7.5-minute series topographic map).
4. EPA Region 6 (U.S. Environmental Protection Agency). 1996. Site Access Letters for the Wilcox Oil Site.
5. Williams, D.G. 1996. WESTON. Personal Communication with Mr. Hal Cantwell, ODEQ.
6. Ace Aerial Photo Service. Aerial Photographs for portions of Section 29, Township 16 North, Range 9 East: 1956, 1966, 1976, 1985.
7. Aerial Oklahoma, Inc. 1995. Aerial Photographs for portions of Section 29, Township 16 North, Range 9 East.
8. Reid, G. 1930. "Wilcox Has Modern Installation in Bristow Plant." *The Refiner and Natural Gasoline Manufacturer*. Vol. 9, No. 9. September 1930.
9. Williams, D.G. 1996. Personal communication with Mr. Jack White, Property Owner.
10. EPA (U.S. Environmental Protection Agency). 1994. Potential Hazardous Waste Site, Site Identification Form.
11. Sanborn Map Company. Excerpts from Fire Insurance Maps for Bristow, Creek County, Oklahoma: 1915, 1920, 1923, and 1961.
12. Creek County Tax Assessor. Ownership Map for the Wilcox Oil site. Unknown date.
13. Cates, D.A. 1994. ODEQ. Memorandum: Hydrology and Ground Water Use, Wilcox Oil Company Refinery Site, Creek County, Oklahoma. 8 November 1994.
14. WESTON. 1997. Net Annual Precipitation Calculation. Houston, Texas.
15. Cates, D.A. 1994. ODEQ. Memorandum: Public Water Supply near Bristow, Oklahoma. 12 December 1994.

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16. USGS. 1990. Bristow, Oklahoma. (30 x 60 minute series topographic map).
17. Federal Emergency Management Agency. 1981. Flood Hazard Boundary Map, Creek County, Oklahoma (Unincorporated Area). Community Panel Number 400490 0007 A, 19 May 1981.
18. U.S. Department of Commerce. 1961. *Rainfall Frequency Atlas*. 2-year, 24-hour Rainfall for the United States.
19. Williams, D.G. 1997. Personal Communication with Ms. Rebecca Pool, ODEQ Water Quality Division. 21 February 1997
20. U.S. Fish and Wildlife Service. National Wetlands Inventory Maps for the Bristow, OK (1980) and Slick, OK (1980), 7.5-minute series quadrangles.
21. Williams, D.G. 1997. Personal Communication with Mr. Mark Ambler, Oklahoma Fish and Wildlife, 26 February 1997.
22. U.S. Department of Agriculture, Soil Conservation Service. 1959. Soil Survey for Creek County, Oklahoma. May 1959.
23. Environmental Science Services Administration. 1968. *Climatic Atlas*. Reprinted by the National Oceanic and Atmospheric Administration.

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# LEGEND

- FENCE
- ▣ RESIDENCE
- ABOVE GROUND TANK
- BERM
- FORMER LOCATION OF TANK
- - - SITE BOUNDARY
- SS-00 SOIL SAMPLE
- POND

## NOTE

GROUNDWATER SAMPLE LOCATIONS WILL BE IDENTIFIED DURING THE FIELD SAMPLING ACTIVITIES.

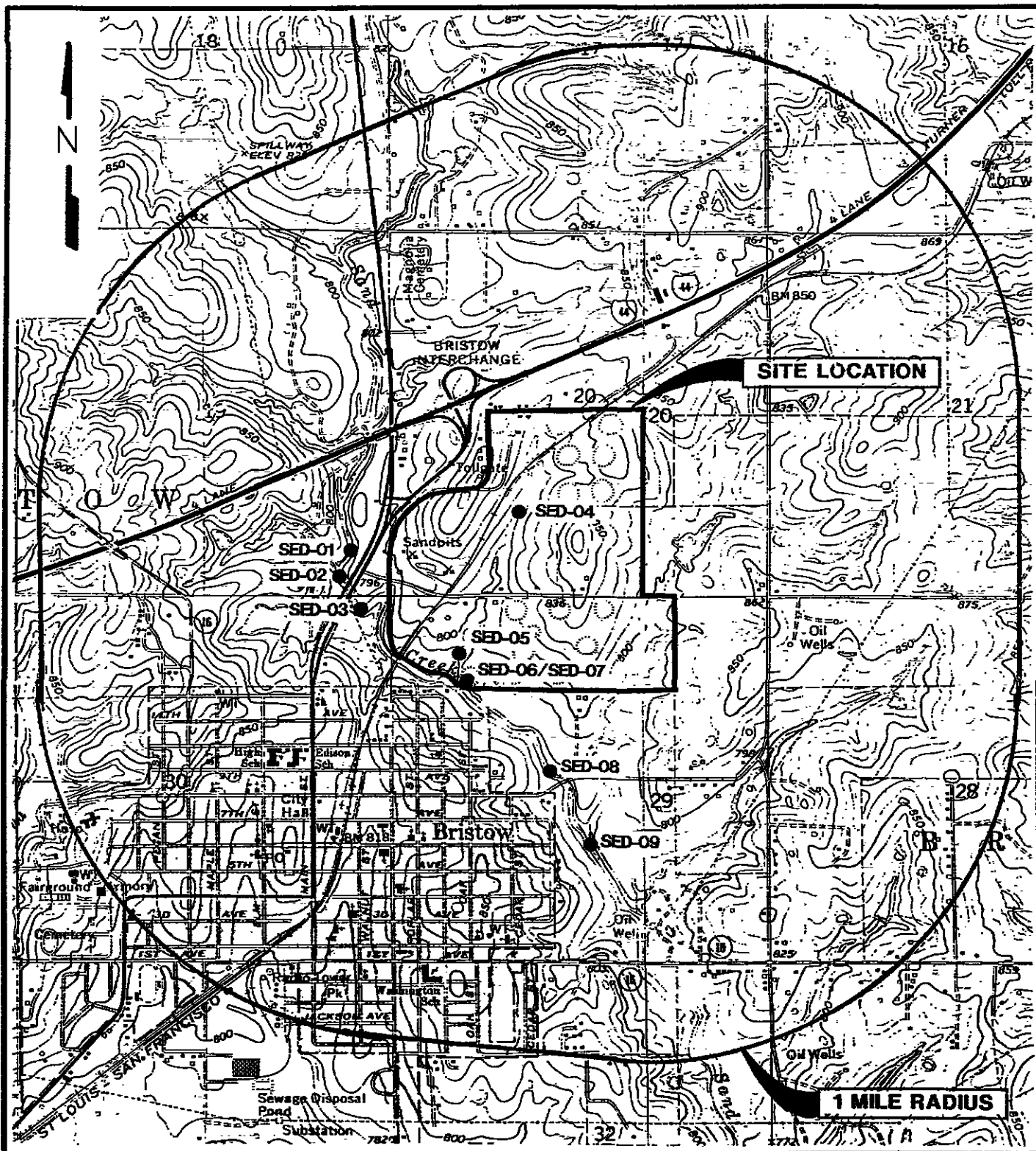
0 250 500  
SCALE IN FEET

**WESTON**  
ENVIRONMENTAL

## FIGURE 4-1 SAMPLE LOCATION MAP

WILCOX OIL COMPANY  
BRISTOW, OKLAHOMA  
CERCLA ID NO.: OKD001010917

EPA REGION VI  
ARCS EXPANDED SITE INSPECTION  
W.O. NO.: 04606-056-026-0600



BASE MAP FROM:  
U.S. DEPT. OF THE INTERIOR  
GEOLOGICAL SURVEY  
BRISTOW QUADRANGLE  
SLICK QUADRANGLE  
OKLAHOMA  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
1973 SERIES

SED-10 TO BE COLLECTED  
JUST PAST THE CONFLUENCE  
OF SAND CREEK AND THE  
LITTLE DEEP FORK CREEK.

SED-01

● SEDIMENT SAMPLE LOCATION

0 1000 2000



SCALE IN FEET

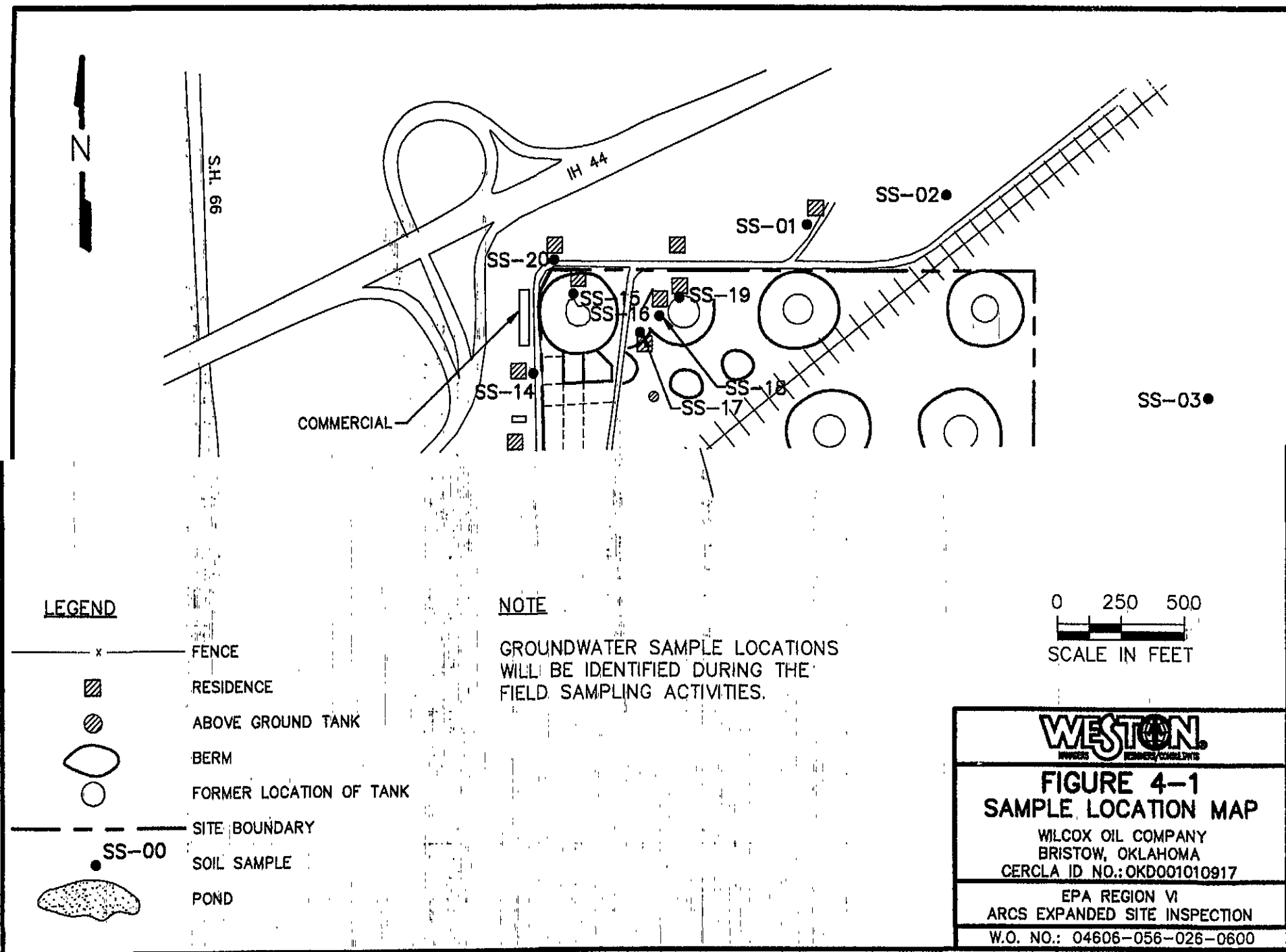
**WESTON**  
INVESTIGATORS ENGINEERS CONSULTANTS

# **FIGURE 4-2 AREA SAMPLE LOCATION MAP**

WILCOX OIL COMPANY  
BRISTOW, OKLAHOMA  
CERCLA ID NO.: OKD001010917

EPA REGION VI  
ARCS EXPANDED SITE INSPECTION

W.O. NO.: 04606-056-026-0600



**Table 4-2**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sampling Station Descriptions and Rationales**

<b>Station Identification/Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Sample Identification/QC Type</b>
<b>GW-01 Background</b>	Low concentration groundwater sample collected from a well located upgradient of the site.	To characterize and document background levels of constituents in groundwater.	GW-01 Normal
<b>GW-02 Background</b>	Low concentration groundwater sample collected from a well located upgradient of the site.	To characterize and document background levels of constituents in groundwater.	GW-02 Normal
<b>GW-03 Characterization</b>	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-03 Normal  GW-13 Duplicate
<b>GW-04 Characterization</b>	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-04 Normal  GW-14 Duplicate
<b>GW-05 Characterization</b>	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-05 Normal
<b>GW-06 Characterization</b>	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-06 Normal
<b>GW-07 Characterization</b>	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-07 Normal
<b>GW-08 Characterization</b>	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-08 Normal
<b>GW-09 Characterization</b>	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-09 Normal
<b>GW-10 Characterization</b>	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-10 Normal

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**Table 4-2 (Continued)**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sampling Station Descriptions and Rationales**

<b>Station Identification/Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Sample Identification/QC Type</b>
<b>GW-11</b> Characterization	Low concentration groundwater sample collected from a well located on or near the site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-11 Normal
<b>GW-12</b> Characterization	Low concentration groundwater sample collected from a well located on or near the site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-12 Normal
<b>GW-15</b> Field QA/QC	Field blank sample collected in the field using deionized water.	Field blank sample for quality assurance purposes.	GW-15 Field Blank
<b>SED-01</b> Background	Low concentration sediment sample collected from Sand Creek, west of S.H. 66 and upstream of the PPE.	To document a background levels of constituents in the surface water pathway.	SED-01 Normal
<b>SED-02</b> Background	Low concentration sediment sample collected from Sand Creek, west of S.H. 66 and upstream of the PPE.	To document background levels of constituents in the surface water pathway.	SED-02 Normal
<b>SED-03</b> Background	Low concentration sediment sample collected from Sand Creek, east of S.H. 66 and upstream of the PPE.	To document background levels of constituents in the surface water pathway.	SED-03 Normal
<b>SED-04</b> Characterization	Low concentration sediment sample collected from an on-site pond and potential wetland.	To document a release of site-attributable hazardous constituents to the surface water pathway.	SED-04 Normal
<b>SED-05</b> Characterization	Low concentration sediment sample collected from an on-site pond and potential wetlands.	To document a release of site-attributable hazardous constituents to the surface water pathway.	SED-05 Normal
<b>SED-06</b> Characterization	Low concentration sediment sample collected from Sand Creek, at the PPE.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-06 Normal  SED-07 Duplicate
<b>SED-08</b> Characterization	Low concentration sediment sample collected from Sand Creek, approximately 0.5 mile downstream of the PPE.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-08 Normal
<b>SED-09</b> Characterization	Low concentration sediment sample collected from Sand Creek, approximately 0.75 mile downstream of the PPE.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-09 Normal

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**Table 4-2 (Continued)**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sampling Station Descriptions and Rationales**

<b>Station Identification/Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Sample Identification/QC Type</b>
<b>SED-10</b> Characterization	Low concentration sediment sample collected from the Little Deep Fork Creek, just past the confluence of Sand Creek.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-10 Normal
<b>SS-01</b> Background	Low concentration soil sample collected from the yard of an off-site residence.	To characterize background levels of constituents in soils.	SS-01 Normal
<b>SS-02</b> Background	Low concentration soil sample collected north of and outside the influence of the site.	To characterize background levels of constituents in soils.	SS-02 Normal
<b>SS-03</b> Background	Low concentration soil sample collected from an undisturbed area east of the site.	To document the background levels of constituents in soils.	SS-03 Normal
<b>SS-04</b> Characterization	Low concentration soil sample collected from the yard of the Sampley residence.	To document the presence of hazardous constituents in surface soils.	SS-04 Normal
<b>SS-05</b> Characterization	Low concentration soil sample collected from the yard of the White residence.	To document the presence of hazardous constituents in the surface soils.	SS-05 Normal
<b>SS-06</b> Characterization	Low concentration soil sample collected from barren area in the southern portion of the White's property.	To document the presence of hazardous constituents in surface soils.	SS-06 Normal
<b>SS-07</b> Characterization	Low concentration soil sample collected from an on-site residential property.	To document the presence of hazardous constituents in surface soils.	SS-07 Normal  SS-08 Duplicate
<b>SS-09</b> Characterization	Low concentration soil sample collected from an on-site residential property.	To document the presence of hazardous constituents in surface soils.	SS-09 Normal
<b>SS-10</b> Characterization	Low concentration soil sample collected from an on-site residential property.	To document the presence of hazardous constituents in surface soils.	SS-10 Normal
<b>SS-11</b> Characterization	Low concentration soil sample collected from an on-site residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-11 Normal

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**Table 4-2 (Continued)**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sampling Station Descriptions and Rationales**

<b>Station Identification/Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Sample Identification/QC Type</b>
SS-12 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-12 Normal
SS-13 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in soils.	SS-13 Normal
SS-14 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in soils.	SS-14 Normal
SS-15 Characterization	Low concentration sample collected from an on-site residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-15 Normal  SS-16 Duplicate
SS-17 Characterization	Low concentration sample collected from an on-site residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-17 Normal
SS-18 Characterization	Low concentration sample collected from an on-site residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-18 Normal
SS-19 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in surface soils.	SS-19 Normal
SS-20 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in surface soils.	SS-20 Normal
WS-01 Characterization	High concentration waste sample collected from Pond 1.	To characterize and document the presences of hazardous constituents in the pond.	WC-01 Normal
WS-02 Characterization	High concentration waste sample collected from Pond 1.	To characterize and document the presences of hazardous constituents in the pond.	WS-02 Normal
WS-03 Characterization	High concentration waste sample collected from Pond 2.	To characterize and document the presences of hazardous constituents in the pond.	WS-03 Normal

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**Table 4-2 (Continued)**  
**Wilcox Oil Company (CERCLIS ID OKD0001010917)**  
**Sampling Station Descriptions and Rationales**

<b>Station Identification/Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Sample Identification/QC Type</b>
<b>WS-04</b> Characterization	High concentration waste sample collected from Pond 2.	To characterize and document the presence of hazardous constituents in the pond.	WS-04 Normal  WS-05 Duplicate
<b>WS-06</b> Characterization	High concentration waste sample collected from Pit.	To characterize and document the presence of hazardous constituents in the Pit.	WS-06 Normal
<b>WS-07</b> Characterization	High concentration waste sample collected from a leaded tank bottom.	To characterize and document the presence of hazardous constituents in the source.	WS-07 Normal
<b>WS-08</b> Characterization	High concentration waste sample collected from a leaded tank bottom.	To characterize and document the presence of hazardous constituents in the source.	WS-08 Normal

**APPENDIX A**

**PHOTOGRAPHS**

**Photograph: 1**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Background sediment sample SED-01, collected from Sand Creek, west (upstream) of S.H. 66 and site.



**Photograph: 2**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Close-up of SED-01 sediment samples.



### Photograph: 3



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Background sediment sample SED-02, collected from Sand Creek upstream of SH 66.



**Photograph: 4**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Sediment sample SED-04, collected from Tributary 1 of Sand Creek, north of the site and the Refinery Road.



## Photograph: 5



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Sediment sample SED-03, collected from Sand Creek, just west of SH 66 bridge.



## Photograph: 6



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Sediment sample location SED-06/07, collected from PPE-1 in Sand Creek.



**Photograph: 7**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Sediment sample location SED-08, collected from Sand Creek north of 6th Street bridge.



**Photograph: 8**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Sediment sample location SED-09, collected from PPE-3 in Sand Creek.



**Photograph: 9**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Sediment sample SED-10, collected from Sand Creek, just south of Highway 16 bridge.



## Photograph: 10



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Soil sample SS-06, collected from unvegetated area in the southern portion of the Whites' property.



## Photograph: 11



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Unusual soil structure noted in unvegetated area of White's property (near soil sample station SS-06).



**Photograph: 12**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	08/16/96
<b>Description:</b>	View of unvegetated area located in southern portion of Whites' property.



**Photograph: 13**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	08/16/96
<b>Description:</b>	Tank on Whites' property.



**Photograph: 14**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Soil sample location SS-05, collected from Whites' yard. White residence in background.



**Photograph: 15**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Debris and trash near refinery building ruins on Whites' property.



## Photograph: 16



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Discarded rusted drums near refinery building ruins on White property.



**Photograph: 17**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Old refinery buildings on Whites' property.



**Photograph: 18**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Soil sample location SS-04, collected from yard of Sampley residence.



**Photograph: 19**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/18/96
<b>Description:</b>	Soil sample SS-12, collected from yard behind First Assembly of God church.



**Photograph: 20**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Background soil sample SS-01, collected from field located on the west side of S.H. 66, south of Sand Creek.



**Photograph: 21**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Background soil sample SS-02, collected from east side of S.H. 66.



**Photograph: 22**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Background soil sample SS-03, collected approximately 0.7 mile due north of the site.



**Photograph: 23**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Soil samples SS-07 and SS-08, collected from yard of Lee residence.



**Photograph: 24**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Small pond behind Lee residence. Note drainage swale leading from fence line to pond; layers of black asphalt-like material noted at the confluence of the swale and pond.



**Photograph: 25**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/19/96
<b>Description:</b>	Sediment sample SED-05, collected from east side of pond behind Lee residence.



**Photograph: 26**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	View of Lee residence. Seeps of black material occur in foreground and in cracks of driveway.



**Photograph: 27**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Waste sample WS-03, collected from seep on Lee property.



**Photograph: 28**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Waste sample WS-01, collected from Pond 1.



**Photograph: 29**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	View of seeps emanating from Pond 1.



**Photograph: 30**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	View of black, tarry material seeping up through ponded water on Pond 1.



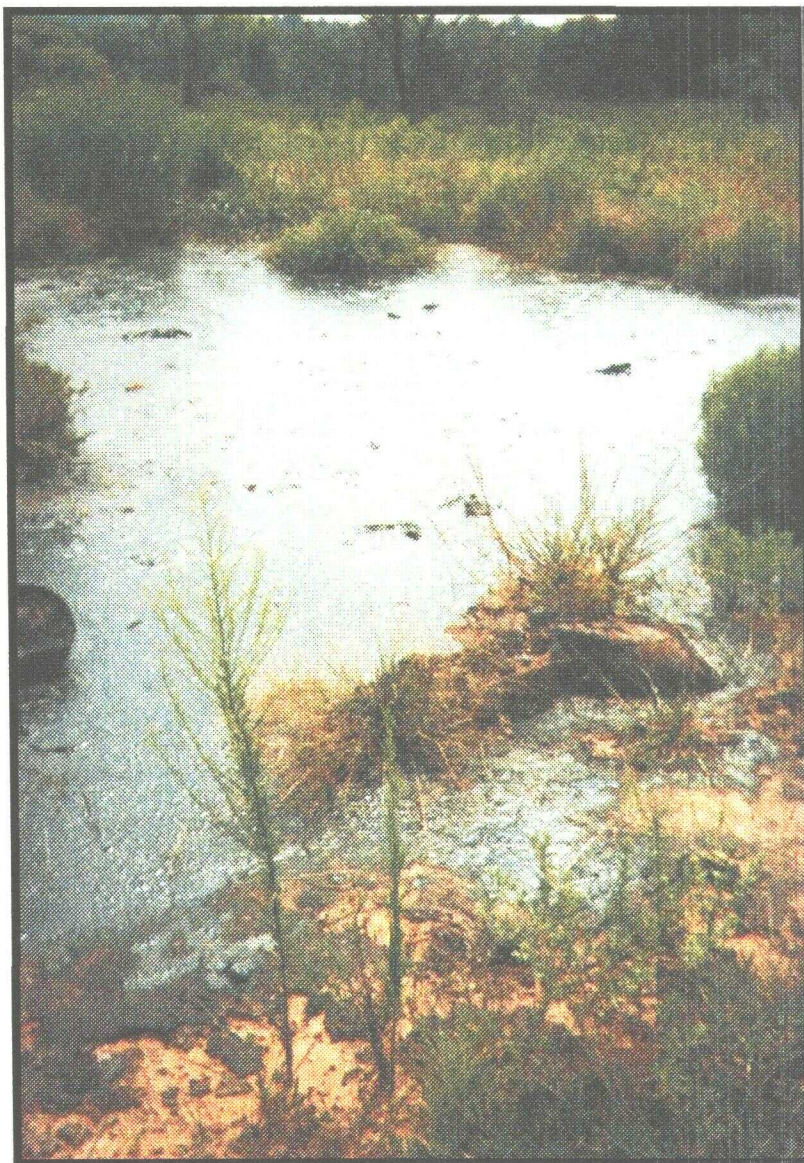
**Photograph: 31**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Close-up of seep on Pond 1.



**Photograph: 32**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	08/16/96
<b>Description:</b>	View of Pond 1.



**Photograph: 33**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Waste sample WS-04, collected from Pond 2.



## Photograph: 34



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Sheen on surface water runoff from Pond 2.



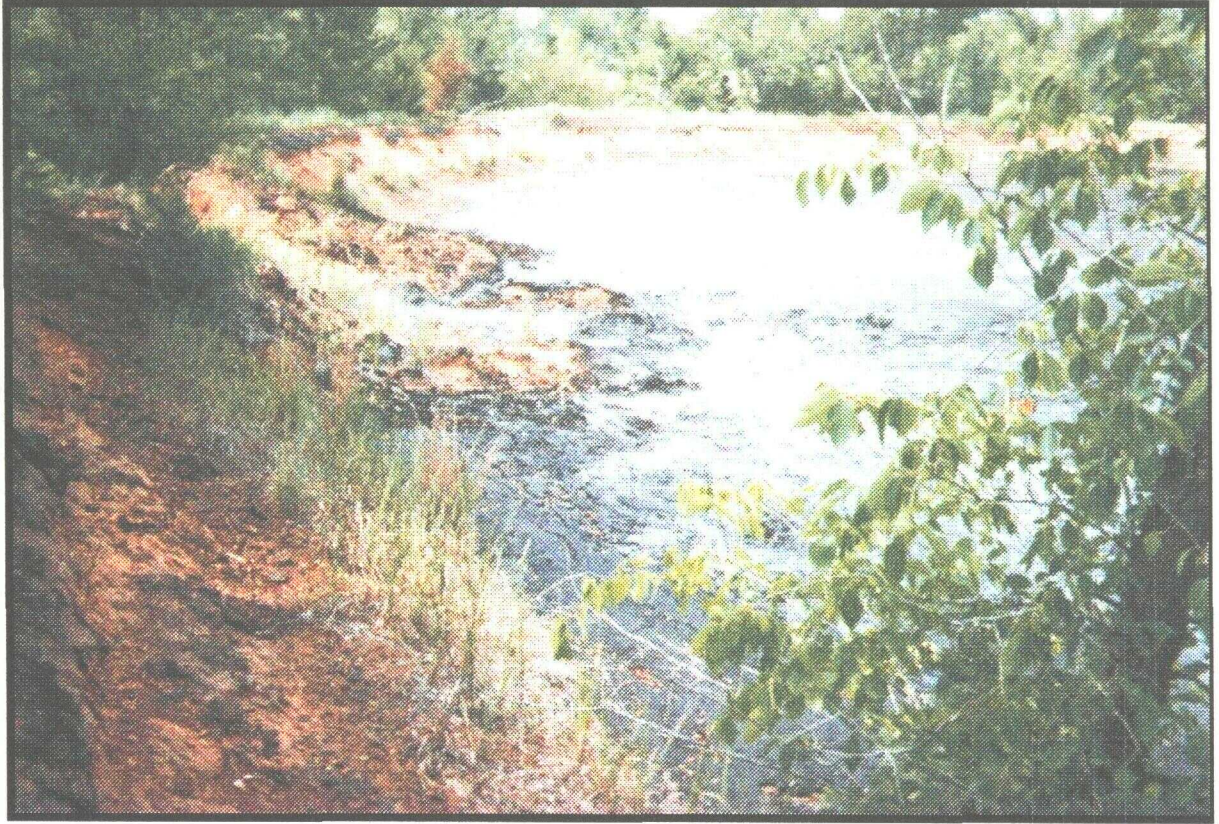
**Photograph: 35**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Breached berm on southwest side of Pond 2.



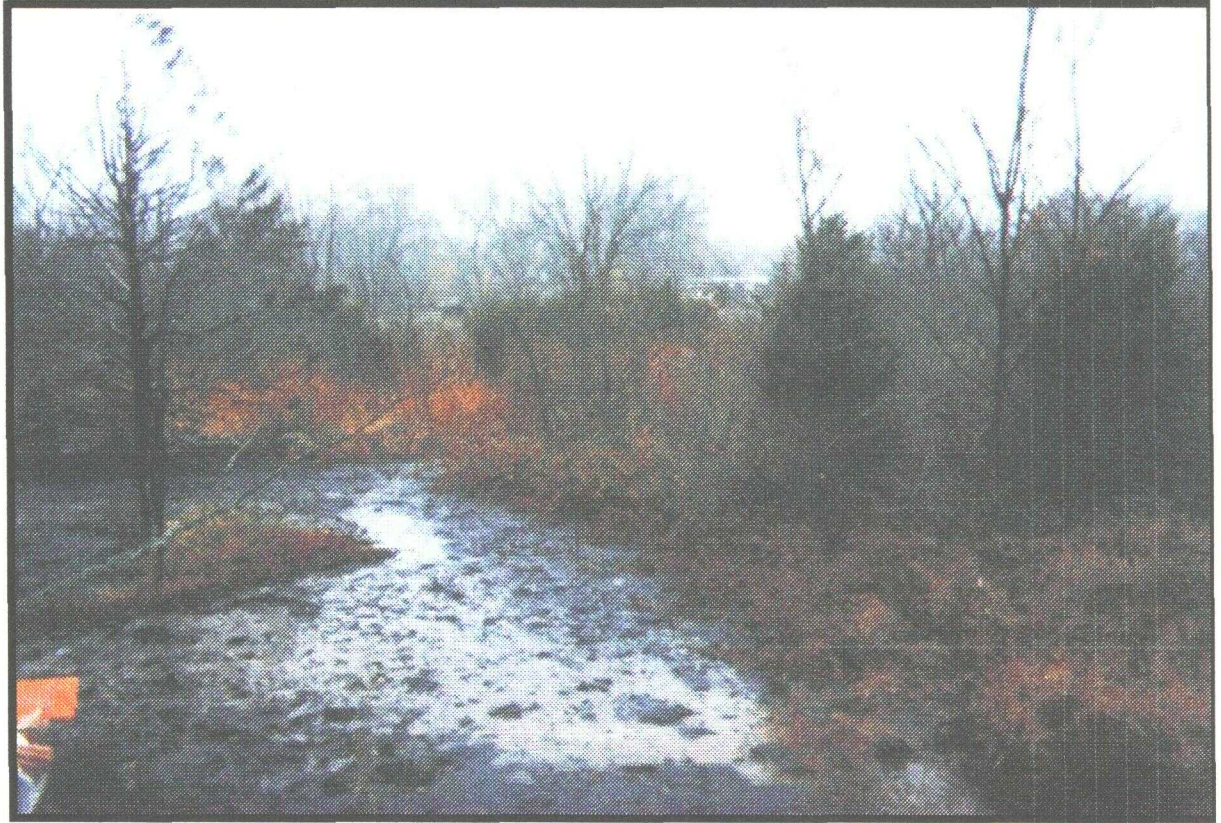
**Photograph: 36**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	View of Pit. Note cut berm on left.



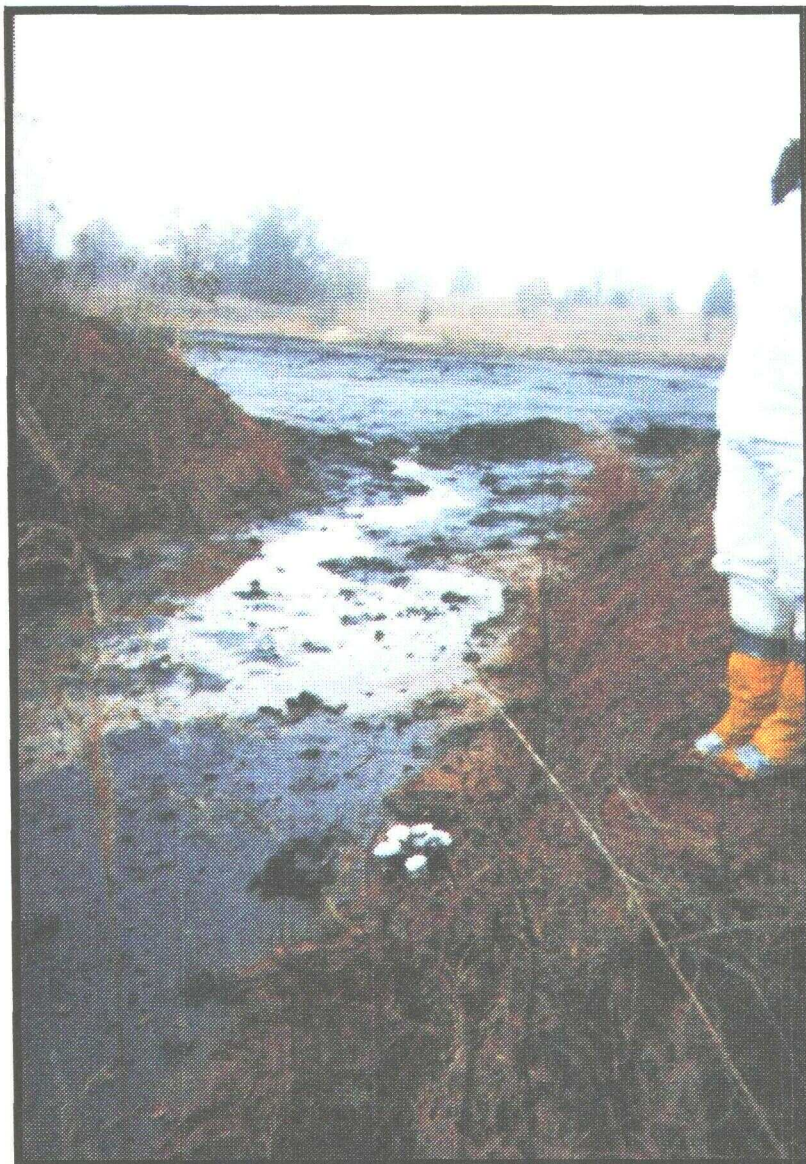
**Photograph: 37**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	View of black, tarry material migrating from Pit.



**Photograph: 38**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Waste samples WS-05 and WS-06, collected from material migrating through the breached berms of Pit.



**Photograph: 39**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	View of tank bottom near Waste Sample WS-07.



**Photograph: 40**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Sheen on water draining from tank bottom area near waste sample WS-07.



**Photograph: 41**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	08/16/96
<b>Description:</b>	View of tank bottom; waste sample WS-08 collected from this area.



**Photograph: 42**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	Close-up of waste sample WS-08, collected from tank bottom material.



**Photograph: 43**



<b>Site Name:</b>	Wilcox Oil Company
<b>Site Location:</b>	Bristow, OK
<b>CERCLIS ID:</b>	OKD0001010917
<b>Weston Work Order:</b>	04606-056-026-0600
<b>Photographer:</b>	Diane Williams
<b>Witness:</b>	Joy Ishigo
<b>Date of Photograph:</b>	11/20/96
<b>Description:</b>	View of tank bottom area and waste sample WS-08.

**APPENDIX B**

**DATA PACKAGE EXCERPTS**





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE RD.  
HOUSTON, TEXAS 77099

MEMORANDUM

Date: 1-24-1997  
Subject: Contract Laboratory Program Data Review  
From: Melvin L. Ritter, ESAT RPO, 6MD-HC  
To: L. Biasco, 6SF-RA

Site: WILCOX OIL  
Case#: 25159  
SDG#: MFG-Z66

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- ( ) Acceptable: No major problems with data package.
- (X) Provisional: Use of data requires caution.  
Data is acceptable for Regional use. Problems are noted in the review report.
- ( ) Unacceptable: Some or all of data should not be used.  
Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

cc: R. Flores, Region 6 CLP/TPO  
M. El-feky, Region 6 Data Coordinator

Files (2)



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ESAT Region 6

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Fax No. (713) 988-2994

Contract Laboratory Program  
REGIONAL/LABORATORY COMMUNICATION SYSTEM  
FAX Record Log

Date of FAX: January 17, 1997

Laboratory Name: ARI

Lab Contact: Paul Jay Kuhn

Region: 6

Regional Contact: Mervin Doucet (ESAT)

FAX Initiated by: Region

In reference to data for the following sample number:

MFG-Z66

Summary of Questions/Issues:

1. The sample tag was not sealed in a plastic bag (SOW ILM04.0, page B-13, F.3.d). Please submit an acknowledgement of this contractual deviation and note for future reference.
2. According to the raw data (page 271), the selenium analysis time on the Form 14 (page 53) for sample MFG-Z66 should be 15:33. Please resubmit the corrected Form 14.
3. According to the raw data (page 286), the mercury analysis times for most standards do not match the analysis times on the Form 14 (page 55). Please make the necessary corrections and resubmit.
4. According to the raw data (pages 80-84), the ICP analysis times for all standards do not match the analysis times on the Form 14 (page 53). Please make the necessary corrections and resubmit.

EPA expects the laboratory to look into items and submit data within seven days to Mahmoud El-Feky, U.S. EPA, 10625 Fallstone Road, Houston TX 77099.

Mervin S. Doucet  
Signature

1/17/97

Date

Distribution: (1) Lab Copy (2) Region Copy



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10101 SOUTHWEST FREEWAY, SUITE 500  
HOUSTON, TEXAS 77074

Page 1 of 2

MEMORANDUM

DATE: January 17, 1997  
TO: Dr. Melvin Ritter, ESAT RPO, Region VI  
FROM: Dr. Tom C.H. Chiang, ESAT ETM, Region VI  
SUBJECT: CLP Data Review *Ja C.H. Chiang*  
REF: TDF # 6-7129A ESAT File # I2077

Attached is the data review summary for Case #25159  
SDG #MEGZ66  
Site WILCOX OIL

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF DATA PACKAGE:

- A. The hard copy data review confirmed the following contractual noncompliance found by CCS.

The laboratory performed the cyanide matrix spike analysis with the wrong cyanide spike concentration (SOW ILM04.0, page E-23, Table 3). The reviewer determined the wrong cyanide spike concentration did not affect the technical usability of the sample results.

- B. The hard copy data review detected the following contractual noncompliances not found by CCS.

1. The data package was received at the Region nine days late for the required 35-day turnaround time.
2. The laboratory did not seal the sample tag in a plastic bag (SOW ILM04.0, page B-13, F.3.d).

II. TECHNICAL/USABILITY ASSESSMENT OF DATA PACKAGE:

A total of 24 results were reviewed for this data package. The data package is technically provisional because of the following problems.

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Page -2 of -2

MEMORANDUM

Attached is the data review summary for Case #25159  
SDG #MFGZ66  
Site WILCOX OIL

II. TECHNICAL/USABILITY ASSESSMENT OF DATA PACKAGE, continued:

- A. Approximately eight percent of all results were qualified because of technical problems.
- B. The matrix spike recoveries were below the QC limits for antimony and lead.
- C. The difference between lead laboratory duplicate results exceeded the QC limit.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6 - HOUSTON BRANCH  
10625 FALLSTONE ROAD  
HOUSTON, TEXAS 77099

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 25159 SITE WILCOX OIL  
LABORATORY ARI NO. OF SAMPLES 1  
CONTRACT # 68-D5-0134 MATRIX SOIL  
SDG # MFGZ66 REVIEWER (IF NOT ESD) ESAT  
SOW# ILM04.0 REVIEWER'S NAME Mervin Doucet  
ACCT # 7FAXJN28 SF # FAXUZZ COMPLETION DATE January 17, 1997

SAMPLE NO.: MFG-Z66

DATA ASSESSMENT SUMMARY

	ICP	HG	Cyanide	GFAA
1. HOLDING TIMES	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
2. CALIBRATIONS	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
3. BLANKS	<u>C</u>	<u>O</u>	<u>O</u>	<u>O</u>
4. MATRIX SPIKES	<u>M</u>	<u>O</u>	<u>O</u>	<u>M</u>
5. DUPLICATE ANALYSIS	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>
6. ICP QC	<u>O</u>			
7. FAA QC				<u>O</u>
8. LCS	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
9. SAMPLE VERIFICATION	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
10. OTHER QC	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
11. OVERALL ASSESSMENT	<u>M</u>	<u>O</u>	<u>O</u>	<u>M</u>

O = Data had no problems.

M = Data qualified because of major or minor problems.

Z = Data unacceptable.

N/A = Not applicable.

ACTION ITEMS: The sample tag was not sealed in a plastic bag.  
The laboratory returned the data package to the Region nine days late.

AREAS OF CONCERN: The matrix spike recoveries were less than 75 percent for antimony and lead. The lead laboratory duplicate difference failed QC criteria. The laboratory used the wrong cyanide spike concentration to perform cyanide matrix spike analysis.

NOTABLE PERFORMANCE:



INORGANIC QA REVIEW  
CONTINUATION PAGE

Case 25159 SDG MFGZ66 Site WILCOX OIL Lab ART

COMMENTS: The package consisted of data for one soil sample for total metals and cyanide analysis by ILM04.0. The laboratory failed to meet the required 35-day data package turnaround time and did not place the sample tag in a sealed plastic bag. The laboratory also performed the cyanide matrix spike analysis with an incorrect spike concentration. Twenty-five percent of the reported results are above the CRDL's.

This data package is technically provisional because of problems with matrix spike recoveries and a laboratory duplicate difference. The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Sheet.

An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

1. **Holding Times:** Acceptable. All holding time and sample preservation criteria were met.
2. **Calibrations:** Acceptable. All calibrations were acceptable. Analysis of CRDL standards indicated that instrument performance near the CRDL's was acceptable.
3. **Blanks:** Acceptable. All preparation and calibration blanks met contractual requirements although concentrations for six analytes were reported in the blanks. The potassium result was below the CRDL and affected by the preparation blank concentration.
4. **Pre-digestion/Pre-distillation Matrix Spike Recovery:** Provisional. The results for antimony and lead were qualified as estimated with a low bias because the matrix spike recoveries failed QC criteria.
5. **Duplicate Analysis:** Provisional. The lead laboratory duplicate difference failed technical QC criteria, so the lead result was qualified as estimated.

INORGANIC QA REVIEW  
CONTINUATION PAGE

Case 25159 SDG MFGZ66 Site WILCOX OIL Lab ART

6. ICP Quality Control:

Serial Dilution: Acceptable. All serial dilution differences met QC criteria.

Interference Check Sample: Acceptable. All ICS results were acceptable indicating correct interelement and background correction.

ICP Coefficient of Variation: Acceptable. All ICP replicate readings were consistent.

7. Furnace Atomic Absorption Quality Control:

FAA Analytical Spike Recovery: Acceptable. All FAA analytical spike recovery were acceptable.

FAA Duplicate Injection Relative Standard Deviation: Acceptable. All percent relative standard deviations (%RSD) for duplicate injections were acceptable.

Method of Standard Addition: Acceptable. All MSA's had acceptable correlation coefficients.

8. Laboratory Control Sample: Acceptable. All LCS recoveries were within the QC limits.

9. Sample Verification: The reviewer could not verify all reporting errors found by CCS. The reviewer did detect some reporting errors not found by CCS and contacted the laboratory concerning these issues (see attached FAX Record Log).

10. Other QC: Not applicable.

11. Overall Assessment: The data package is technically provisional because of the following problems.

The antimony and lead results were qualified because the matrix spike recoveries were below the QC limits.

The lead result was further qualified because the difference between laboratory duplicate results failed QC criteria.

## INORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the inorganic data review process.

- U Undetected at the laboratory reported detection limit (IDL).
- L Reported concentration is between the IDL and the CRDL.
- J Result is estimated because of outlying quality control parameters such as matrix spike, serial dilution, FAA spike recovery, etc.
- R Result is unusable.
- F A possibility of a false negative exists.
- UC Reported concentration should be used as a raised detection limit because of apparent blank contamination.
- ^ High bias. Actual concentration may be lower than the concentration reported.
- v Low bias. Actual concentration may be higher than the concentration reported.



## DATA SUMMARY

Case No.: 25159

SDG. No.: MFG256

Reviewer: M. Doucet

Laboratory: ARI

Matrix: SCIL

Units: mg/Kg

EPA TR #=>	SEP-10 MFG-256	FLAG	FLAG	FLAG	FLAG	FLAG	COMMENTS
ALUMINUM	1570						
ANTIMONY	10.9 UG/g						
ARSENIC	1 L						
BARIUM	15.3 L						
BERYLLIUM	0.22 U						
CADMIUM	0.44 U						
CALCIUM	382 L						
CHROMIUM	3.7						
COBALT	2.1 L						
COPPER	1.9 L						
IRON	3350						
LEAD	15 UG/g						
MAGNESIUM	254 L						
MANGANESE	62.3						
MERCURY	0.05 U						
NICKEL	2.2 U						
POTASSIUM	396 LGC						
SELENIUM	0.22 U						
SILVER	0.65 U						
SODIUM	10.9 U						
THALLIUM	0.22 U						
VANADIUM	5.3 L						
ZINC	8.7						
CYANIDE	0.27 U						
% SOLIDS	90.7						

## INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 25159 SDG No. MFGZ66 SDG Nos. To Follow SAS No. Date Rec 1/3/97

EPA Lab ID: ARI	ORIGINALS	YES	NO	N/A
Lab Location: SEATTLE, WA	CUSTODY SEALS			
Region: 6 Audit No.: 25159/MFGZ66	1. Present on package?	X		
Re_Submitted CSF? Yes No X	2. Intact upon receipt?	X		
Box No(s): 1	FORM DC-2			
COMMENTS:	3. Numbering scheme accurate?	X		
14/15. The airbill did not require receipt signature and date.	4. Are enclosed documents listed?	X		
	5. Are listed documents enclosed?	X		
	FORM DC-1			
	6. Present?	X		
	7. Complete?	X		
	8. Accurate?	X		
	CHAIN-OF-CUSTODY RECORD(s)			
	9. Signed?	X		
	10. Dated?	X		
	TRAFFIC REPORT(s) PACKING LIST(s)			
	11. Signed?	X		
	12. Dated?	X		
	AIRBILLS/AIRBILL STICKER			
	13. Present?	X		
	14. Signed?			X
	15. Dated?			X
	SAMPLE TAGS			
	16. Does DC-1 list tags as being included?	X		
	17. Present?	X		
	OTHER DOCUMENTS			
	18. Complete?	X		
	19. Legible?	X		
	20. Original?		X	
	20a. If "NO", does the copy indicate where original documents are located?	X		

Over for additional comments.

Audited by:

*Mervin Doucet*

MERVIN DOUCET/ESAT DATA REVIEWER

Date 1/7/96

Audited by:

Date

Audited by:

Date

Signature

Printed Name/Title

## TO BE COMPLETED BY CEAT

Date Recvd by CEAT:

Date Entered:

Date Reviewed:

Entered by:

Reviewed by:

Signature

Printed Name/Title

DC-2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE RD.  
HOUSTON, TEXAS 77099

MEMORANDUM

Date: 1-16-1997  
Subject: Contract Laboratory Program Data Review  
From: *M. Humphrey for*  
Melvin L. Ritter, ESAT RPO, 6MD-HC  
To: L. Biasco, 6SF-RA

Site: WILCOX OIL

Case#: 25159

SDG#: MFG-Z44

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- ( ) Acceptable: No major problems with data package.
- (X) Provisional: Use of data requires caution.  
Data is acceptable for Regional use. Problems are noted in the review report.
- ( ) Unacceptable: Some or all of data should not be used.  
Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

cc: R. Flores, Region 6 CLP/TPO  
M. El-feky, Region 6 Data Coordinator

Files (2)



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MEMORANDUM

DATE: January 7, 1997  
TO: Dr. Melvin Ritter, ESAT RPO, Region VI  
FROM: Dr. Tom Chiang, ESAT ETM, Region VI  
SUBJECT: CLP Data Review  
REF: TDF # 6-7111A, ESAT File No. I2073

Attached is the data review summary for Case #25159  
SDG #MFGZ44  
Site WILCOX OIL

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF DATA PACKAGE:

The reviewer detected the following contractual noncompliance. The CCS report was not available at the time of this report preparation.

The laboratory failed to encase the sample tags in a clear plastic bag (ILM04.0, Exhibit F, F-13).

II. TECHNICAL/USABILITY ASSESSMENT OF DATA PACKAGE:

A total of 480 results were reviewed for this data package. The package is technically provisional for the problems summarized below.

- A. The reviewer qualified approximately nine percent of the results because of technical problems.
- B. The antimony matrix spike recovery failed to meet QC criteria.
- C. Four selenium analyses failed FAA QC criteria.
- D. Lead field duplicate results were inconsistent.



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 REGION 6  
 HOUSTON BRANCH  
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 HOUSTON, TEXAS 77099

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 25159 SITE WILCOX OIL  
 LABORATORY ARI NO. OF SAMPLES 20  
 CONTRACT # 68-D5-0134 MATRIX SOIL  
 SDG # MFGZ44 REVIEWER (IF NOT ESD) ESAT  
 SOW# ILM04.0 REVIEWER'S NAME Linda Hoffman  
 ACCT # 7FAXUN28 SF # FAXUZZ COMPLETION DATE January 7, 1997

SAMPLE NO.:	MFG-Z44	MFG-Z48	MFG-Z52	MFG-Z56	MFG-Z60
	MFG-Z45	MFG-Z49	MFG-Z53	MFG-Z57	MFG-Z63
	MFG-Z46	MFG-Z50	MFG-Z54	MFG-Z58	MFG-Z64
	MFG-Z47	MFG-Z51	MFG-Z55	MFG-Z59	MFG-Z65

DATA ASSESSMENT SUMMARY

	ICP	FAA	HG	CYANIDE
1. HOLDING TIMES	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
2. CALIBRATIONS	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
3. BLANKS	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
4. MATRIX SPIKES	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>
5. DUPLICATE ANALYSIS	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
6. ICP QC	<u>M</u>			
7. FAA QC		<u>M</u>		
8. LCS	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
9. SAMPLE VERIFICATION	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
10. OTHER QC	<u>O</u>	<u>M</u>	<u>O</u>	<u>O</u>
11. OVERALL ASSESSMENT	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>

O = Data had no problems.

M = Data qualified because of major or minor problems.

Z = Data unacceptable.

N/A= Not applicable

ACTION ITEMS: The sample tags were not encased in the required plastic bags.

AREAS OF CONCERN: The matrix spike recovery for antimony was less than 75 percent. Four selenium analyses had FAA analytical spike recoveries below 85 percent. The lead field duplicate results were inconsistent. One nickel analysis had a correlation coefficient greater than 20 percent.

NOTABLE PERFORMANCE:

INORGANIC QA REVIEW  
CONTINUATION PAGE

Case 25159 SDG MFGZ44 Site WILCOX OIL Lab ARI

COMMENTS: The package consisted of data for 20 soil samples for total metals and cyanide analyses by ILM04.0. The sampler designated samples MFG-Z49/MFG-Z50, MFG-Z59/MFG-Z60, and MFG-Z65/MFG-Z65 as field duplicate pairs and sample MFG-Z44 as the QC sample. The laboratory met the 35-day turnaround time requirement but did not enclose the sample tags in plastic bags. Thirty-two percent of the reported results were above the CRDL's.

The laboratory incorrectly reported the lead results, which was 55,000 mg/Kg, for sample MFG-Z58. On the Data Summary Table, the reviewer recorded the correct concentration.

The data package is technically provisional because of problems with matrix and FAA analytical spike recoveries, field duplicate differences, and inconsistent instrument readings. The technical usability of all reported results is indicated in the attached Data Summary Table.

An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

1. **Holding Times:** Acceptable. Contractual holding time and sample preservation criteria were met. Technical holding time criteria have not been established for soil samples.
2. **Calibrations:** Acceptable. All calibrations met contractual requirements. The CRDL standard results indicated that instrument performance near the CRDL's was acceptable.
3. **Blanks:** Acceptable. Preparation and calibration blanks met contractual requirements although the laboratory reported calcium, copper, vanadium, and zinc in the blanks. The copper and vanadium blank concentrations only affected sample results below the CRDL's. The following zinc results were above the CRDL's and affected as indicated by the blanks.

The results for samples MFG-Z44, MFG-Z49, and MFG-Z50 are high biased.

INORGANIC QA REVIEW  
CONTINUATION PAGE

Case 25159 SDG MFGZ44 Site WILCOX OIL Lab ARI

3. Blanks, continued:

The results for samples MFG-Z45 and MFG-Z52 are considered undetected.

4. Pre-digestion/Pre-distillation Matrix Spike Recovery: Provisional. The laboratory reported an antimony matrix spike recovery that was below the QC limit, so the reviewer qualified as estimated and biased low all antimony results.

5. Duplicate Analysis: Acceptable. The laboratory reported duplicate differences above the SOW QC limits for aluminum and iron. Since the aluminum difference was only marginally high and the iron difference met technical QC criteria, no results were qualified.

6. ICP Quality Control:

Serial Dilution: Acceptable. The laboratory reported acceptable serial dilution differences.

Interference Check Sample: Acceptable. Acceptable ICS results indicated satisfactory interelement and background correction.

Coefficient of Variation: Provisional. The reviewer qualified as estimated the nickel result for sample MFG-Z65 because replicate ICP readings were inconsistent.

7. Furnace Atomic Absorption Quality Control:

FAA Analytical Spike Recovery: Provisional. The reviewer qualified as estimated and biased low the selenium results for samples MFG-Z58, MFG-Z59, MFG-Z60, and MFG-Z64 because FAA QC criteria were not met. The reviewer did not qualify six other selenium and two thallium results because the analytical spike recoveries were only marginally below the QC limits.

Duplicate Injection Coefficient of Variation: Acceptable. Replicate injections were consistent.

Method of Standard Addition: MSA analysis was not required.

INORGANIC QA REVIEW  
CONTINUATION PAGE

Case 25159 SDG MFGZ44 Site WILCOX OIL Lab ARI

8. Laboratory Control Sample: Acceptable. Acceptable LCS results indicated satisfactory sample preparation and analysis.
9. Sample Verification: The reviewer detected a few reporting errors and contacted the laboratory for resubmission (see attached FAX Record Log).
10. Other QC:

Field Duplicate: Provisional. The reviewer qualified all lead results because two of the three field duplicate pairs had inconsistent lead results.

11. Overall Assessment: The data package is technically provisional for the following reasons.

The reviewer qualified all antimony and four selenium results because of matrix related problems.

The reviewer qualified one nickel result because of inconsistent instrument readings.

The reviewer qualified all lead results because of poor precision.



## INORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the inorganic data review process:

- U Undetected at the laboratory reported detection limit (IDL).
- L Reported concentration is between the IDL and the CRDL.
- J Result is estimated because of outlying quality control parameters such as matrix spike, serial dilution, FAA spike recovery, etc.
- R Result is unusable.
- F A possibility of a false negative exists.
- UC Reported concentration should be used as a raised detection limit because of apparent blank contamination.
- ^ High bias. Actual concentration may be lower than the concentration reported.
- v Low bias. Actual concentration may be higher than the concentration reported.

## DATA SUMMARY

Case No.: 25159

SDG. No.: MFGZ44

Reviewer: L. Hoffman

Laboratory: ARI

Matrix: SOIL

Units: mg/Kg

EPA TR #=>	<u>SED-01</u> FLAG MFG-Z44	<u>SED-02</u> FLAG MFG-Z45	<u>SED-03</u> FLAG MFG-Z46	<u>SED-04</u> FLAG MFG-Z47	<u>SED-05</u> FLAG MFG-Z48	COMMENTS
ALUMINUM	2200	1400	2170	2550	1610	
ANTIMONY	12.2 UJV	11.5 UJV	12.4 UJV	12.1 UJV	12.4 UJV	
ARSENIC	1.3 L	0.93 L	2.1 L	1.9	0.90 L	
BARIUM	21.4 L	15.4 L	30.9 L	35.8 L	15.3 L	
BERYLLIUM	0.24 U	0.23 U	0.25 U	0.24 U	0.25 U	
CADMIUM	0.49 U	0.46 U	0.50 U	0.48 U	0.50 U	
CALCIUM	406 L	368 L	808 L	12600	576 L	
CHROMIUM	5.6	3.3	4.0	6.1	3.9	
COBALT	2.3 L	1.4 L	2.7 L	2.1 L	1.2 L	
COPPER	2.7 LUC	1.5 LUC	3.0 LUC	5.5 L	2.9 L	
IRON	4340	2880	4870	5690	2630	
LEAD	5.0 J	4.0 J	33.9 J	117 J	54.0 J	
MAGNESIUM	333 L	247 L	425 L	6260	317 L	
MANGANESE	112	67.0	168	319	72.3	
MERCURY	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	
NICKEL	3.4 L	3.4 L	3.1 L	4.7 L	3.2 L	
POTASSIUM	373 L	190 L	362 L	436 L	294 L	
SELENIUM	0.24 U	0.23 U	0.25 U	0.24 U	0.24 U	
SILVER	0.73 U	0.69 U	0.74 U	0.73 U	0.74 U	
SODIUM	12.2 U	11.5 U	12.4 U	49.9 L	12.4 J	
THALLIUM	0.31 L	0.23 L	0.25 U	0.29 L	0.24 U	
VANADIUM	6.5 LJV	4.5 LJV	6.8 LJV	7.0 LJV	5.1 LJV	
ZINC	7.6 J	6.2 UC	11.6	31.7	11.6	
CYANIDE	0.30 U	0.30 U	0.31 U	0.31 U	0.31 U	
% SOLIDS	81.9	82.7	80.0	81.8	80.0	

## DATA SUMMARY

Case No.: 25159

SDG. No.: MFG244

Reviewer: D. Hoffman

Laboratory: ARI

Matrix: SOIL

Units: mg/Kg

EPA TR #=>	SEP-06 MFG-249	SEP-07 MFG-250	SEP-08 MFG-251	SEP-09 MFG-252	SEP-01 MFG-253	COMMENTS
ALUMINUM	1850	1790	2720	1670	3630	
ANTIMONY	12.0 UJV	12.0 UJV	12.4 UJV	12.1 UJV	11.6 UJV	
ARSENIC	1.1 L	1.3 L	1.6 L	1.4 L	1.5 L	
BARIUM	21.3 L	24.0 L	32.7 L	15.4 L	46.6	
BERYLLIUM	0.24 U	0.24 U	0.25 U	0.24 U	0.23 U	
CADMIUM	0.48 U	0.48 U	0.53 U	0.48 U	0.58 L	
CALCIUM	557 L	628 L	859 L	315 L	1590	
CERMIUM	2.8	2.9	4.6	4.0	5.7	
COBALT	1.6 L	1.9 L	2.6 L	1.6 L	2.4 L	
COPPER	1.8 UCC	1.7 UCC	3.0 L	1.5 L	5.2 L	
IRON	3400	3550	5000	3560	4850	
LEAD	5.0 U	15.3 U	29.4 U	4.8 U	26.3 U	
MAGNESIUM	324 L	337 L	465 L	228 U	577 L	
MANGANESE	93.1	113	X 284	73.3	191	
MERCURY	0.06 U	0.05 U	0.05 U	0.05 U	0.06 U	
NICKEL	3.8 L	3.6 L	4.3 L	2.4 U	5.3 L	
POTASSIUM	280 L	313 L	417 L	289 L	704 L	
SELENIUM	0.25 U	0.24 U	0.24 U	0.24 U	0.24 U	
SILVER	0.72 U	0.72 U	0.74 U	0.72 U	0.70 U	
SODIUM	12.0 U	12.0 U	12.4 U	12.1 U	11.6 U	
THALLIUM	0.25 U	0.24 L	0.24 U	0.24 U	0.26 L	
VANADIUM	4.9 LJV	5.0 LJV	6.6 LJV	5.5 LJV	9.7 L	
ZINC	9.0 U	8.0 U	21.7	6.0 U	24.3	
CYANIDE	0.30 U	0.30 U	0.32 U	0.30 U	0.30 U	
† SOLIDS	81.6	82.5	77.6	82	93.4	

## DATA SUMMARY

Case No.: 25159

SDG. No.: MFGZ44

Reviewer: L. Hoffman

Laboratory: ARI

Matrix: SOIL

Units: mg/Kg

EPA TR #=>	<u>SS-02</u> MFG-Z54	FLAG	<u>SS-03</u> MFG-Z55	FLAG	<u>SS-04</u> MFG-Z56	FLAG	<u>SS-05</u> MFG-Z57	FLAG	<u>SS-06</u> MFG-Z58	FLAG	COMMENTS
ALUMINUM	5580		3550		3430		4060		9090		
ANTIMONY	11.0 UJv		12.5 UJv		12.2 UJv		11.5 UJv		12.7 UJv		
ARSENIC	1.3 L		1.5 L		1.3 L		2.3		1.5 L		
BARIUM	53.2		31.8 L		31.8 L		34.8 L		39.0		
BERYLLIUM	0.28 L		0.26 L		0.24 U		0.23 U		0.40 L		
CADMIUM	0.44 U		0.50 U		0.49 U		0.72 L		0.51 U		
CALCIUM	1510		516 L		947 L		1750		1240 L		
CERMIUM	3.2		6.7		4.4		7.2		11.0		
COBALT	3.3 L		4.6 L		1.3 L		2.5 L		5.6 L		
COPPER	5.3 L		4.4 L		4.5 L		12.4		127		
IRON	5340		7430		4570		6910		11200		
LEAD	19.5 U		6.6 U		11.6 U		369 U		<u>55047 J</u> <del>55046</del>		
MAGNESIUM	693 L		746 L		423 L		774 L		1050 L		
MANGANESE	233		80.7		96.4		209		414		
MERCURY	0.05 U		0.06 U		0.05 U		0.18		0.06 U		
NICKEL	7.3 L		10.4		5.9 L		5.4 L		10.1		
POTASSIUM	361 L		940 L		480 L		680 L		1150 L		
SELENIUM	0.23 U		0.24 U		0.25 U		0.23 U		0.26 UJv		
SILVER	0.66 U		0.75 U		0.73 U		0.69 U		0.76 U		
SODIUM	20.5 L		17.7 L		17.8 L		14.2 L		2330		
THALLIUM	0.23 U		0.39 L		0.25 U		0.27 L		1.3 U		
VANADIUM	11.2		8.0 L		7.2 LJV		9.8 L		19.5		
ZINC	34.8		23.5		36.3		132		25.7		
CYANIDE	0.29 U		0.31 U		0.31 U		0.29 U		0.35 U		
% SOLIDS	95.4		79.8		79.1		86.1		72.4		



## DATA SUMMARY

Case No.: 25159

SDG: No.: MFGZ44

Reviewer: L. Hoffman

Laboratory: ARI

Matrix: SOIL

Units: mg/Kg

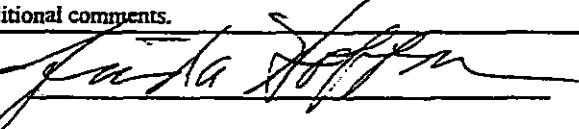
SPA TR #=>	55-01	55-08	55-11	55-12	55-13	COMMENTS
	FLAG	FLAG	FLAG	FLAG	FLAG	
	MFG-Z59	MFG-Z60	MFG-Z63	MFG-Z64	MFG-Z65	
ALUMINUM	7060	5720	2000	5350	5110	
ANTIMONY	11.9 UJv	11.5 UJv	10.7 UJv	11.8 UJv	12.9 UJv	
ARSENIC	1.5 L	1.7 L	1.0 L	1.8 L	2.0 L	
BARIUM	54.6	52.5	35.7 L	47.6	46.2 L	
BERYLLIUM	0.31 L	0.23 U	0.21 U	0.25 L	0.24 U	
CADMIUM	0.47 U	0.46 U	0.43 U	0.47 U	0.48 U	
CALCIUM	2830	2810	767 L	4950	4540	
CERONIUM	11.7	9.2	2.7	7.7	7.0	
COBALT	3.2 L	2.4 L	1.3 L	3.0 L	3.0 L	
COPPER	6.9	6.2	5.2 L	13.6	11.4	
IRON	3790	2570	2970	9570	6330	
LEAD	25.5 L	57.9 L	25.9 U	251 U	260 U	
MAGNESIUM	963 L	902 L	338 L	957 L	1030 L	
MANGANESE	134	127	163	174	164	
MERCURY	0.05 U	0.05 U	0.05 U	0.08 L	0.09 L	
NICKEL	6.8 L	6.4 L	2.1 U	8.6 L	8.9 L	
POTASSIUM	1070 L	778 L	377 L	795 L	762 L	
SELENIUM	0.22 UJv	0.24 UJv	0.21 U	0.23 UJv	0.23 U	
SILVER	0.71 U	0.69 U	0.64 U	0.71 U	0.72 U	
SODIUM	23.1 L	18.0 L	10.7 U	70.6 L	56.1 L	
THALLIUM	0.29 L	0.36 L	0.21 U	0.39 L	0.35 L	
VANADIUM	15.6	13.5	4.0 L	16.8	14.7	
ZINC	26.2	24.1	50.7	70.1	69.7	
CYANIDE	0.30 U	0.30 U	0.28 U	0.30 U	0.30 U	
% SOLIDS	83.5	82.7	88.4	83.1	83.6	

# INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 25159 SDG No. MFGZ44 SDG Nos. To Follow \_\_\_\_\_ SAS No. \_\_\_\_\_ Date Rec 12/26/96

EPA Lab ID: <u>ARI</u> Lab Location: <u>Seattle, WA</u> Region: <u>6</u> Audit No.: <u>25159/MFGZ44</u> Re_Submitted CSF? Yes _____ No <u>X</u> Box No(s): <u>1</u> COMMENTS: 3. The laboratory failed to paginate the page between pages 154 and 155. The reviewer added the appropriate page number to this page. 4. Page 316 was not listed on Form DC-2-2. The reviewer made the appropriate correction. 14/15. The laboratory failed to sign and date Airbill #7802823346. however, the airbill does not provide a section for the laboratory receipt date and signature.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">ORIGINALS</th> <th style="text-align: center;">YES</th> <th style="text-align: center;">NO</th> <th style="text-align: center;">N/A</th> </tr> <tr> <td colspan="4"><b>CUSTODY SEALS</b></td> </tr> <tr> <td>1. Present on package?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>2. Intact upon receipt?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>FORM DC-2</b></td> </tr> <tr> <td>3. Numbering scheme accurate?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>4. Are enclosed documents listed?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>5. Are listed documents enclosed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>FORM DC-1</b></td> </tr> <tr> <td>6. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>7. Complete?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>8. Accurate?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>CHAIN-OF-CUSTODY RECORD(s)</b></td> </tr> <tr> <td>9. Signed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>10. Dated?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>TRAFFIC REPORT(s) PACKING LIST(s)</b></td> </tr> <tr> <td>11. Signed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>12. Dated?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>AIRBILLS/AIRBILL STICKER</b></td> </tr> <tr> <td>13. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>14. Signed?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>15. Dated?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td colspan="4"><b>SAMPLE TAGS</b></td> </tr> <tr> <td>16. Does DC-1 list tags as being included?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>17. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>OTHER DOCUMENTS</b></td> </tr> <tr> <td>18. Complete?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>19. Legible?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>20. Original?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>20a. If "NO", does the copy indicate where original documents are located?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> </table>	ORIGINALS	YES	NO	N/A	<b>CUSTODY SEALS</b>				1. Present on package?	X			2. Intact upon receipt?	X			<b>FORM DC-2</b>				3. Numbering scheme accurate?		X		4. Are enclosed documents listed?		X		5. Are listed documents enclosed?	X			<b>FORM DC-1</b>				6. Present?	X			7. Complete?	X			8. Accurate?	X			<b>CHAIN-OF-CUSTODY RECORD(s)</b>				9. Signed?	X			10. Dated?	X			<b>TRAFFIC REPORT(s) PACKING LIST(s)</b>				11. Signed?	X			12. Dated?	X			<b>AIRBILLS/AIRBILL STICKER</b>				13. Present?	X			14. Signed?		X		15. Dated?		X		<b>SAMPLE TAGS</b>				16. Does DC-1 list tags as being included?	X			17. Present?	X			<b>OTHER DOCUMENTS</b>				18. Complete?	X			19. Legible?	X			20. Original?		X		20a. If "NO", does the copy indicate where original documents are located?	X		
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Over for additional comments.

Audited by: 	Linda Hoffman / ESAT Data Reviewer	Date <u>01/02/97</u>
Audited by: _____	_____	Date _____
Audited by: _____	_____	Date _____

Signature

Printed Name/Title

## TO BE COMPLETED BY CEAT

Date Recvd by CEAT: _____	Date Entered: _____	Date Reviewed: _____
Entered by: _____	_____	_____
Reviewed by: _____	_____	_____

Signature

Printed Name/Title

In Reference to  
Case 25159/SDG MFGZ44  
Page 1 of 2 Pages  
ESAT File No.: 12073

Contract Laboratory Program  
REGIONAL/LABORATORY COMMUNICATION SYSTEM

FAX Record Log

Date of FAX: January 7, 1997

Laboratory Name: ARI

Lab Contact: Jeff Reiran

Region: 6

Regional Contact: Linda Hoffman (ESAT)

FAX Initiated by: Region

In reference to data for the following sample number(s):

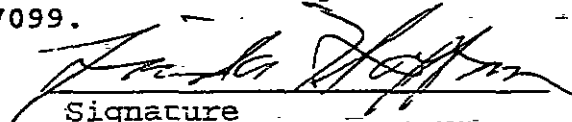
All samples in this SDG.

Summary of Questions/Issues:

1. The sample tags were not encased in the contractually required clear plastic bags (ILM04.0, Exhibit F, F-13, 5th bullet). Please acknowledge this requirement and note for the future.
2. On the SDG/TR Cover Sheet (p. 365), the last sample in the SDG is also listed as the SDG number. Please correct this discrepancy and resubmit page 365.
3. The SDG number was not recorded on the traffic reports under the "Lab Receipt Date" (ILM04.0, Exhibit B, B-6, 2nd paragraph from bottom of page). Please acknowledge and note for the future.
4. On the Form 1's, the "Date Received" is incorrect for the samples on pages 7, 8, 9, 10, 12, 13, 19, 20, 21, 25, and 26. The received date for these samples is 11/19/96, not 11/20/96. Please make the necessary corrections and resubmit the listed pages.
5. On Form 1 (p. 21), the lead result is incorrectly reported. The correct result should be 55,000, not 55,049. Please correct the lead concentration and resubmit page 21.

6. In the lead instrument raw data, time of analysis was not recorded for the initial and continuing calibration verifications and blanks (ILM04.0, Exhibit B, B-11, d, #9). Please add the time of each ICV, ICB, CCV, and CCB analysis to the lead instrument raw data and resubmit.
7. Please explain why the ICV/CCV concentrations in the cyanide raw data do not always agree with the concentrations reported on the Form 2's and make any necessary corrections and resubmissions.
8. The instrument ID was not recorded in the cyanide raw data (ILM04.0, Exhibit B, B-9, C.2.d and B-11, #7). Please record the instrument ID, as it appears on Form 14, on the first page of the cyanide raw data and resubmit.

The EPA expects the laboratory to look into items and submit data within seven days to Mahmoud El-Feky, U.S. EPA, 10625 Fallstone Road, Houston TX 77099.

  
Signature

01/07/97  
Date

Distribution: (1) Lab Copy, (2) Region Copy



Lockheed Martin Services Group  
ESAT Region 6

10101 S. W. Freeway, Suite 500, Houston, TX 77074 TEL: (713) 988-2983

FACSIMILE COVER SHEET

Please deliver the following pages to:

Name Jeff Reitan

Firm ARI

City Seattle State WA

Telephone 206-621-6490 Ext. \_\_\_\_\_

FAX Telephone No. 206-621-7523 Ext. \_\_\_\_\_

Sender:

Name Linda Hoffman ESAT

Date 01/07/97 Time \_\_\_\_\_

Total Number of pages including this Cover Sheet 3

If you do not receive all the pages or if any pages are unclear,  
please call: (713) 988-2983.

MESSAGES: \_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_

FAX No. (713) 988-2994



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE RD.  
HOUSTON, TEXAS 77099

MEMORANDUM

Date: 1-16-1997

Subject: Contract Laboratory Program Data Review

From: *M. Humphrey*  
Melvin L. Ritter, ESAT RPO, 6MD-HC

To: L. Biasco, 6SF-RA

Site: WILCOX OIL

Case#: 25159

SDG#: FF-G24

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- (X) Acceptable: No major problems with data package.
- ( ) Provisional: Use of data requires caution.  
Data is acceptable for Regional use. Problems are noted in the review report.
- ( ) Unacceptable: Some or all of data should not be used.  
Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

cc: R. Flores, Region 6 CLP/TPO  
M. El-feky, Region 6 Data Coordinator

Files (2)



Recycled/Recyclable  
Printed with Soy/Candela Ink on paper that  
contains at least 50% recycled fiber



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE RD.  
HOUSTON, TEXAS 77099

MEMORANDUM

Date: 1-21-1997  
Subject: Contract Laboratory Program Data Review  
From: *M. Humphrey*  
Melvin L. Ritter, ESAT RPO, 6MD-HC  
To: L. Biasco, 6SF-RA

Site: WILCOX OIL

Case#: 25159

SDG#: FF-G02

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- ( ) Acceptable: No major problems with data package.
- (X) Provisional: Use of data requires caution.  
Data is acceptable for Regional use. Problems are noted in the review report.
- ( ) Unacceptable: Some or all of data should not be used.  
Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

cc: R. Flores, Region 6 CLP/TPO  
M. El-feky, Region 6 Data Coordinator

Files (2)



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Printed with Soy/Canola Ink on paper that  
contains at least 50% recycled fiber

LOCKHEED MARTIN SERVICES GROUP  
10101 Southwest Freeway, Suite 500  
HOUSTON, TX 77074

MEMORANDUM

DATE: January 10, 1997  
TO: Dr. Melvin Ritter, ESAT RPO, Region VI  
FROM: Dr. Tom C. H. Chiang, ESAT ETM, Region VI *Tom C. H. Chiang*  
SUBJECT: CLP Data Review  
REF: TDF # 6-7113A  
ESAT # 0-1780

Attached is the data review summary for Case # 25159  
SDG # EFG02  
Site Wilcox Oil

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF THE DATA PACKAGE

- A. The data package contained the following contractual non-compliance as determined by the hard copy data review and the CCS audit.

The laboratory extracted BNA sample FF-G06RE 29 days after sample receipt (OLM03.0, D-18/SVOA, 8.4.1). All results were qualified for this sample because of the excessive holding time.

- B. The data package contained the following contractual non-compliance as determined by the hard copy data review but not by CCS.

1. Pest/PCB method blank PBLKSC had a peak on the DB-17 column above the CRQL that interfered with the detection of endosulfan sulfate (OLM03.0, D-73/PEST, 12.1.2.4). This deficiency caused the raised quantitation limits for endosulfan sulfate in samples FF-G15 and FF-G23.

2. The data package arrived three days late.

II. TECHNICAL/USABILITY ASSESSMENT OF THE DATA PACKAGE

A total of 2,500 results were reviewed for this data package. The data package is technically provisional and technical deficiencies are listed below.

1. One BNA sample was extracted 29 days after sample collection.
2. Four VOA and eight BNA samples had low internal standard responses.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE ROAD  
HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 25159	SITE Wilcox Oil
LABORATORY AATS	NO. OF SAMPLES 20
CONTRACT# 68-D5-0022	MATRIX Soil
SDG# FFG02	REVIEWER (IF NOT ESD) ESAT
SOW# RAS SOW OLM03.2	REVIEWER'S NAME Maria Missler
ACCT# 7FAXJN28 SF# FAXUZZ	COMPLETION DATE January 10, 1997

SAMPLE NO.	FF-G02	FF-G06	FF-G10	FF-G14	FF-G18
	FF-G03	FF-G07	FF-G11	FF-G15	FF-G21
	FF-G04	FF-G08	FF-G12	FF-G16	FF-G22
	FF-G05	FF-G09	FF-G13	FF-G17	FF-G23

DATA ASSESSMENT SUMMARY

	VOA	BNA	PEST
1. HOLDING TIMES	O	M	O
2. GC/MS TUNE/INSTR. PERFORM.	O	O	O
3. CALIBRATIONS	M	O	O
4. BLANKS	O	O	M
5. SMC/SURROGATES	O	O	O
6. MATRIX SPIKE/DUPLICATE	O	O	O
7. OTHER QC	M	O	O
8. INTERNAL STANDARDS	M	M	N/A
9. COMPOUND ID/QUANTITATION	O	O	M
10. PERFORMANCE/COMPLETENESS	O	O	O
11. OVERALL ASSESSMENT	M	M	M

O = Data had no problems.

M = Data qualified because of major or minor problems.

Z = Data unacceptable.

NA = Not applicable.

**ACTION ITEMS:** BNA sample FF-G06RE was extracted 19 days past the holding time requirement. One Pest/PCB method blank had a peak that interfered with the detection of endosulfan sulfate above the CRQL on one column.

**AREA OF CONCERN:** The extraction holding time was excessive for BNA sample FF-G06RE. A contaminant in the method blank obscured the detection of endosulfan sulfate in two Pest/PCB samples. Acetone failed technical calibration criteria. Four VOA and eight BNA samples had low internal standard responses. Results were inconsistent for a pair of field duplicates. The two column quantitation results differed by more than 25 percent for three Pest/PCB samples. The data package arrived three days late.

COMMENTS/CLARIFICATIONS  
REGION 6 CLP QA REVIEW

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

<u>No.</u>	<u>Acceptable</u>	<u>Provisional</u>	<u>Unacceptable</u>
VOA	<u>14</u>	<u>6</u>	<u></u>
BNA	<u>11</u>	<u>9</u>	<u></u>
PEST	<u>16</u>	<u>4</u>	<u></u>

COMMENTS: The case consisted of 20 soil samples for complete RAS organic analysis. The OTR/COC Record designated sample FF-G02 for MS/MSD analyses and samples FF-G07/FF-G08, FF-G17/FF-G18, and FF-G22/FF-G23 as field duplicate pairs. The laboratory analyzed at low levels the VOA/BNA soil samples.

The data package contained the following contractual non-compliances.

BNA sample FF-G06RE was extracted 19 days past the contractual holding time limit. Only sample FF-G06RE is billable even though the laboratory also submitted data for the original analysis FF-G06.

The Pest/PCB method blank PBLKSC had a peak interfering with the detection of endosulfan sulfate above the CROL on one column.

The data package arrived 3 days late for the contractual 35-day turnaround time.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 and their reanalyses had low internal standard responses. The reanalyses should be used for all except sample FF-G15.

BNA The extraction holding time for sample FF-G06RE was excessive (29 days past collection). Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had low internal standard responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated internal standard performance.

Pest/PCB An interfering contaminant in the method blank obscured the detection of endosulfan sulfate in samples FF-G15 and FF-G23.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

Comments (continued)

Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Some results are provisional for six VOA, nine BNA, and four Pest/PCB samples because of problems with holding time, calibration, blank contamination, field duplicate consistency, internal standard responses, and compound quantitation.

The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Tables. An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

1. Holding Times: Provisional. All samples met the contractual holding time requirement except as follows. No technical holding time criteria exist for soil samples.

BNA sample FF-G06RE was extracted 29 days after collection and receipt. In the reviewer's opinion, all results are estimated and biased low because of the excessive holding time.

2. Tuning/Performance: Acceptable. The BFB and DFTPP analyses met GC/MS tuning criteria. The VOA and BNA sample analyses were within 12 hours of the respective BFB/DFTPP analyses. The Pest/PCB analyses met performance guidelines.

3. Calibrations: Provisional. Target compounds met contractual calibration criteria. The acetone result is estimated in VOA sample FF-G17 because of a technical %D calibration deficiency.

Pest/PCB The reviewer was unable to reproduce the following calibration results on both analytical columns based on the raw data submitted:

the TCX and DCB initial calibration factors; and

the TCX and DCB calculated amounts in all INDAM/INDBM calibration verification analyses.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

3. Calibrations, Pest/PCB (continued)

The results reported by the laboratory differed consistently by a factor of two from the reviewer-calculated ones. The reviewer did not qualify results because the reported %RSD and %D values were not affected. However, the laboratory was contacted for clarification of this discrepancy.

4. Blanks: Provisional. The VOA and BNA method and storage blanks met contractual requirements.

BNA The method blanks contained phthalates below the CRQL's. In the reviewer's opinion, all "B"-flagged laboratory results should be considered as undetected (U) because the sample concentrations were less than 10X the associated blank concentrations.

Pest/PCB Soil method blank PBLKSC contained a peak above the CRQL that interfered with the identification of endosulfan sulfate on one column. The reviewer qualified as undetected the endosulfan sulfate results in associated samples FF-G15 and FF-G23 because of possible laboratory contamination.

In the reviewer's opinion, the following results should be used as raised quantitation limits because of the presence of the analyte in the associated method blanks (below the CRQL's) on one or both columns:

endrin aldehyde in sample FF-G12; and

γ-chlordane in sample FF-G17.

The γ-chlordane result in sample FF-G18 is biased high and "B" flagged because of possible laboratory contamination.

5. System Monitoring Compounds (SMC)/Surrogates: Acceptable. The SMC and surrogate recoveries met QC criteria except as follows.

BNA Sample FF-G06 had high recoveries for two base-neutral surrogates. The re-extraction had acceptable recoveries and should be used.

Samples FF-G17RE, FF-G18RE, FF-G21RE, and FF-G22RE had high recoveries for two base-neutral surrogates. No results were qualified for the high recoveries as no analytes were detected above the CRQL's in these samples.



ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

5. System Monitoring Compounds (SMC)/Surrogates (continued)

Pest/PCB All reported surrogate recoveries were a factor of two lower than the reviewer-calculated ones. This problem is a consequence of the incorrect calibration factors reported for the initial calibrations (see section 3). All surrogate recoveries were within QC limits based on the reviewer's calculations.

6. Matrix Spike/Matrix Spike Duplicate: Acceptable. The MS/MSD analyses met recovery and precision requirements for all fractions.

7. Other QC:

Field Duplicates: Provisional. The acetone and methylene chloride results are estimated in field duplicates FF-G17 and FF-G18 because of inconsistent concentrations (differ by a factor of two or more). Other field duplicate results were consistent.

8. Internal Standards: Provisional. The internal standard (IS) responses and retention times were within the QC limits with the following exceptions.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 were reanalyzed because of low IS responses. The reanalyses had low but improved responses for samples FF-G11, FF-G13, and FF-G22, so the reanalysis data should be used. The original analysis data should be used for sample FF-G15.

Results are estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

<u>Sample</u>	<u>IS</u>
FF-G11RE	IS3
FF-G13RE	IS1, IS3
FF-G15	IS2, IS3
FF-G22RE	IS3

BNA Sample FF-G06 had low internal standard responses, but the reanalysis had acceptable responses, and data should be used. Sample FF-G02MSD had one low IS response, but reanalysis was not required.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Willcox Oil LAB AATS

8. Internal Standards, BNA (continued)

Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had outlying IS responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated IS performance. The results designated for use are indicated on the attached data summary tables.

The reviewer qualified results as estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

<u>Sample</u>	<u>IS</u>
FF-G09	IS6
FF-G15	IS4, IS5, IS6
FF-G16	IS4, IS5, IS6
FF-G17	IS5, IS6
FF-G18	IS5, IS6
FF-G21	IS5, IS6
FF-G22	IS4, IS5, IS6
FF-G23	IS5, IS6

9. Compound Identity/Quantitation: Provisional. Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)-perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Compound identification and quantitation met contractual guidelines for the VOA and BNA samples. GC/MS confirmation was not feasible for the Pest/PCB positive results.

Pest/PCB The "P" flagged results above CRQL's are estimated in samples FF-G15, FF-G17, FF-G18, and FF-G23 because the quantitation results between the two columns differ by more than 25 percent.

10. Performance/Completeness: Acceptable. The laboratory response to the CCS request was received and should be used. The data package was complete with minor deficiencies. The laboratory was contacted for correction and resubmission (see attached FAX Record Log).

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FEG02 SITE Wilcox Oil LAB AATS

11. Overall Assessment: Data are acceptable for 14 VOA, 11 BNA, and 16 Pest/PCB samples.

VOA Some results are estimated for samples FF-G11RE, FF-G13RE, FF-G15, FF-G17, FF-G18, and FF-G22RE because of a calibration deficiency, inconsistent field duplicate results, and low internal standard responses.

BNA Some results are estimated for samples FF-G06RE, FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 because of a holding time problem and low internal standard responses.

Pest/PCB Some results are estimated for samples FF-G15, FF-G17, FF-G18, and FF-G23 because of blank contamination and compound quantitation deficiencies.

## ORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the Data Summary Table.

- U Not detected at reported quantitation limit.
- N Identification is tentative.
- J Estimated value.
- R Unusable.
- ^ High biased. Actual concentration may be lower than the concentration reported.
- v Low biased. Actual concentration may be higher than the concentration reported.
- F+ A false positive exists.
- F- A false negative exists.
- B This result may be high biased because of laboratory/field contamination. The reported concentration is above 5X or 10X the concentration reported in the method/field blank.
- UJ Estimated quantitation limit.
- T Identification is questionable because of absence of other commonly coexisting pesticides.
- \* Result not recommended for use because of associated QA/QC performance inferior to that from other analysis.



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PFG02

Reviewer: M. Missler

Laboratory: ANTS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	Sed-01 FF-G02	Sed-02 FF-G03	Sed-03 FF-G04	Sed-04 FF-G05	Sed-05 FF-G06	Sed-06 FF-G07	Sed-07 FF-G08
Chloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromomethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Vinyl chloride	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Methylene chloride	1 U	1 U	2 U	2 U	13 U	13 U	2 U
Acetone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Carbon disulfide	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1-Dichloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1-Dichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloroethene (total)	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chloroform	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
2-Butanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,1-Trichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Carbon tetrachloride	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromodichloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloropropane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
cis-1,3-Dichloropropene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Trichloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Dibromochloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,2-Trichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Benzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
trans-1,3-Dichloropropene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromoform	12 U	12 U	13 U	12 U	13 U	13 U	13 U
4-Methyl-2-pentanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
2-Hexanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Tetrachloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,2,2-Tetrachloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Toluene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chlorobenzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Ethylbenzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Styrene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Xylenes (total)	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	18	15	21	19	22	25	23
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	1	1	1	1	1	0	0

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	SEP-08 FF-G09	SEP-09 FF-G10	SEP-01 FF-G11	SEP-01 FF-G11RE	SEP-02 FF-G12	SEP-03 FF-G13	FF-G13RE
Chloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
Bromomethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
Vinyl chloride	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
Chloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
Methylene chloride	5 J	12 U	5 *	12 U	12 U	12 U *	28 J
Acetone	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
Carbon disulfide	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
1,1-Dichloroethene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
1,1-Dichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
1,2-Dichloroethene (total)	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
Chloroform	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
1,2-Dichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
2-Butanone	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJV
1,1,1-Trichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Carbon tetrachloride	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Bromodichloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
1,3-Dichloropropane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
cis-1,3-Dichloropropene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Trichloroethene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Dibromochloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
1,1,2-Trichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Benzene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
trans-1,3-Dichloropropene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Bromoform	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
4-Methyl-2-pentanone	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
2-Hexanone	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
Tetrachloroethene	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
1,1,2,2-Tetrachloroethane	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
Toluene	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
Chlorobenzene	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
Ethylbenzene	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
Styrene	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
Xylenes (total)	14 U	12 U	12 U *	12 UJV	12 U	12 U *	12 UJV
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	29	18	19	19	20	14	14
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	0	0	0	0	0	0	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

WHITE S

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	SS-04 FF-G14	SS-05 FF-G15	FF-G15RE	SS-06 FF-G16	SS-07 FF-G17	SS-08 FF-G18	SS-11 FF-G21
Chloromethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Bromomethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Vinyl chloride	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Chloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Methylene chloride	12 U	2 U	11 U *	13 U	23 U	12 UJ	12 U
Acetone	12 U	11 U	11 U *	13 U	48 U	12 UJ	12 U
Carbon disulfide	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1-Dichloroethene	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1-Dichloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloroethene (total)	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Chloroform	11 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
2-Butanone	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1,1-Trichloroethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Carbon tetrachloride	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Bromodichloromethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
1,3-Dichloropropane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
cis-1,3-Dichloropropene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Trichloroethene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Dibromochloromethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
1,1,2-Trichloroethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Benzene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
trans-1,3-Dichloropropene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Bromoform	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
4-Methyl-2-pentanone	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
2-Hexanone	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Tetrachloroethene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
1,1,2,2-Tetrachloroethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Toluene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Chlorobenzene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Ethylbenzene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Styrene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Xylenes (total)	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	18	13	13	24	18	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LCN	LCN	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	0	0	0	0	0	0	0

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	SS12 FF-G22	FF-G22RE	SS13 FF-G23				
Chloromethane	12 U *	12 U	12 U ✓				
Bromomethane	12 U *	12 U	12 U ✓				
Vinyl chloride	12 U *	12 U	12 U ✓				
Chloroethane	12 U *	12 U	12 U ✓				
Methylene chloride	5 *	12 U	12 U ✓				
Acetone	12 U *	12 U	12 U ✓				
Carbon disulfide	12 U *	12 U	12 U ✓				
1,1-Dichloroethene	12 U *	12 U	12 U ✓				
1,1-Dichloroethane	12 U *	12 U	12 U ✓				
1,2-Dichloroethene (total)	12 U *	12 U	12 U ✓				
Chloroform	12 U *	12 U	12 U ✓				
1,2-Dichloroethane	12 U *	12 U	12 U ✓				
2-Butanone	12 U *	12 U	12 U ✓				
1,1,1-Trichloroethane	12 U *	12 U	12 U ✓				
Carbon tetrachloride	12 U *	12 U	12 U ✓				
Bromodichloromethane	12 U *	12 U	12 U ✓				
1,2-Dichloropropane	12 U *	12 U	12 U ✓				
cis-1,3-Dichloropropene	12 U *	12 U	12 U ✓				
Trichloroethene	12 U *	12 U	12 U ✓				
Dibromochloromethane	12 U *	12 U	12 U ✓				
1,1,2-Trichloroethane	12 U *	12 U	12 U ✓				
Benzene	12 U *	12 U	12 U ✓				
trans-1,3-Dichloropropene	12 U *	12 U	12 U ✓				
Bromoform	12 U *	12 U	12 U ✓				
✓ 4-Methyl-2-pentanone	12 U *	12 UJv	12 U ✓				
✓ 2-Hexanone	12 U *	12 UJv	12 U ✓				
✓ Tetrachloroethene	12 U *	12 UJv	12 U ✓				
✓ 1,1,2,2-Tetrachloroethane	12 U *	12 UJv	12 U ✓				
✓ Toluene	12 U *	12 UJv	12 U ✓				
✓ Chlorobenzene	12 U *	12 UJv	12 U ✓				
✓ Ethylbenzene	12 U *	12 UJv	12 U ✓				
✓ Styrene	12 U *	12 UJv	12 U ✓				
✓ Xylenes (total)	12 U *	12 UJv	12 U ✓				
Sample wt (g):	5	5	5				
%Moisture:	18	18	18				
Dilution Factor:	1	1	1				
Level:	LOW	LOW	LOW				
Number of TIC's:	0	0	0				

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.



## ORGANIC DATA SUMMARY

Case No.: 25189

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	SED-01 FF-G02	SED-02 FF-G03	SED-03 FF-G04	SED-04 FF-G05	SED-05 FF-G06	FF-G06R2	SED-06 FF-G07
Phenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
bis(2-Chloroethyl) ether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
3-Chlorophenol	400 U	390 U	42 U	410 U	420 U *	420 UJv	440 U
1,3-Dichlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
1,4-Dichlorobenzene	400 U	390 U	29 U	410 U	420 U *	420 UJv	440 U
1,2-Dichlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,2'-Oxybis(1-chloropropane)	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
N-Nitroso-di-n-propylamine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachloroethane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Nitrobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Isophorone	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitrophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dimethylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,3-(2-Chloroethoxy)methane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dichlorophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
1,2,4-Trichlorobenzene	400 U	390 U	27 U	410 U	420 U *	420 UJv	440 U
Naphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloroaniline	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachlorobutadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloro-3-methylphenol	400 U	390 U	34 U	410 U	420 U *	420 UJv	440 U
2-Methylnaphthalene	400 U	390 U	420 U	60 U	420 U *	420 UJv	440 U
Hexachlorocyclopentadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,6-Trichlorophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,5-Trichlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
2-Chloronaphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dimethylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Acenaphthylene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,6-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
3-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Acenaphthene	400 U	390 U	32 U	22 U	420 U *	420 UJv	440 U
2,4-Dinitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4-Nitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dibenzofuran	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Diethylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chlorophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Fluorene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4,6-Dinitro-2-methylphenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
N-Nitrosodiphenylamine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Bromophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Pentachlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Phenanthrene	400 U	390 U	420 U	220 U	46 *	420 UJv	440 U
Anthracene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Massier

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G06RE	FF-G07
Carbazole	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Di-n-butylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Fluoranthene	400 U	390 U	420 U	430 U	420 U *	420 UJv	440 U
Pyrene	400 U	390 U	420 U	480 U	420 U *	420 UJv	440 U
Butylbenzylphthalate	15 U	36 U	34 U	57 U	420 U *	420 UJv	45 U
3,3'-Dichlorobenzidine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(a)anthracene	400 U	390 U	420 U	400 U	420 U *	420 UJv	440 U
Chrysene	400 U	390 U	420 U	150 U	420 U *	420 UJv	440 U
bis(2-Ethylhexyl)phthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Di-n-octylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(b)fluoranthene	400 U	390 U	420 U	90 U	420 U *	420 UJv	440 U
Benzo(k)fluoranthene	400 U	390 U	420 U	84 U	420 U *	420 UJv	440 U
Benzo(a)pyrene	400 U	390 U	420 U	100 U	420 U *	420 UJv	440 U
Indeno(1,2,3-cd)pyrene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Dibenz(a,h)anthracene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(g,h,i)perylene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	16	21	19	22	22	25
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	10	9	9	22	20	35	33

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: D5159

SDG: PFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09RE	FF-G10	FF-G11	FF-G12	FF-G13
Phenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
bis(2-Chloroethyl)ether	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Chlorophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,3-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,4-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,2-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,2'-Oxybis(1-chloropropane)	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
N-Nitroso-di-n-propylamine	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachloroethane	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Nitrobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Isophorone	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Nitrophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,4-Dimethylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
bis(2-Chloroethoxy)methane	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,4-Dichlorophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,2,4-Trichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Naphthalene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Chloroaniline	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachlorobutadiene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Chloro-3-methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Methylnaphthalene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachlorocyclopentadiene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4,6-Trichlorophenol	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4,5-Trichlorophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
2-Chloronaphthalene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Dimethylnaphthalene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Acenaphthylene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,6-Dinitrotoluene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
3-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Acenaphthene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4-Dinitrophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
4-Nitrophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Dibenzofuran	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4-Dinitrotoluene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Diethylnaphthalene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Chlorophenyl-phenylether	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Fluorene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
4,6-Dinitro-2-methylphenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
N-Nitrosodiphenylamine	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Bromophenyl-phenylether	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Hexachlorobenzene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Pentachlorophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Phenanthrene	210 U	460 U	460 U *	400 U	410 U	34 U	380 U
Anthracene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09RE	FF-G10	FF-G11	FF-G12	FF-G13
Carbazole	46 J	460 U	460 U *	400 U	410 U	410 U	380 U
Di-n-butylphthalate	430 U	460 U	460 U *	400 U	410 U	23 J ✓	380 U
Fluoranthene	240 J	460 U	460 U *	400 U	410 U	68 J ✓	380 U
Pyrene	270 J	49 J	43 *	400 U	410 U	62 J ✓	380 U
Butylbenzylphthalate	48 J	29 J	32 *	400 U	25 J	21 J ✓	380 U
3,3'-Dichlorobenzidine	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Benzo(a)anthracene	430 U	460 U	460 U *	400 U	410 U	36 J ✓	380 U
Chrysene	96 J	49 J	44 *	400 U	410 U	50 J ✓	380 U
bis(2-Ethylhexyl)phthalate	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Di-n-octylphthalate	430 U	460 UJv	460 U *	400 U	410 U	410 U ✓	380 U
Benzo(b)fluoranthene	430 U	31 J	29 *	400 U	410 U	42 J ✓	380 U
Benzo(k)fluoranthene	430 U	31 J	29 *	400 U	410 U	51 J ✓	380 U
Benzo(a)pyrene	430 U	27 J	24 *	400 U	410 U	36 J ✓	380 U
Indeno(1,2,3-cd)pyrene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Dibenz(a,h)anthracene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Benzo(g,h,i)perylene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	23	29	29	18	19	20	14
Dilution Factor:	1	1	1	1	1	2	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	35	33	28	21	35	26	35

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.



## ORGANIC DATA SUMMARY

Case No.: 15159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G16RE	FF-G17	FF-G17RE
Phenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
bis(2-Chloroethyl) ether	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Chlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,3-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,4-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,2-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Methylphenol	400 U	380 U	380 U *	61 U	57 *	400 U *	400 U
2,2'-Oxybis(1-chloropropane)	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
4-Methylphenol	400 U	380 U	380 U *	94 U	100 *	400 U *	400 U
N-Nitroso-di-n-propylamine	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Hexachloroethane	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Nitrobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Isophorone	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Nitrophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2,4-Dimethylphenol	400 U	380 U	380 U *	350 U	380 *	400 U *	400 U
bis(2-Chloroethoxy)methane	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2,4-Dichlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,2,4-Trichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Naphthalene	400 U	81 U	380 U *	430 U	430 U *	400 U *	400 U
4-Chloroaniline	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Hexachlorobutadiene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
4-Chloro-3-methylphenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Methylnaphthalene	400 U	200 U	380 U *	430 U	430 *	400 U *	400 U
Hexachlorocyclopentadiene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4,6-Trichlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4,5-Trichlorophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
2-Chloronaphthalene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Dimethylphthalate	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Acenaphthylene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,6-Dinitrotoluene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
3-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Acenaphthene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4-Dinitrophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
4-Nitrophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Dibenzofuran	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4-Dinitrotoluene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Diethylphthalate	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
4-Chlorophenyl-phenylether	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Fluorene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
4-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
4,6-Dinitro-2-methylphenol	1000 U	950 UJv	950 U *	1100 UJv	1100 U *	1000 U	1000 U *
N-Nitrosodiphenylamine	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
4-Bromophenyl-phenylether	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
Hexachlorobenzene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
Pentachlorophenol	1000 U	950 UJv	950 U *	1100 UJv	1100 U *	1000 U	1000 U *
Phenanthrene	400 U	790 U	820 *	430 UJv	430 U *	400 U	400 U *
Anthracene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *

## ORGANIC DATA SUMMARY

Case No.: 25153

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G16RE	FF-G17	FF-G17RE
Carbazole	400 U	380 U <sup>v</sup>	380 U *	430 U <sup>v</sup>	430 U *	400 U	400 U *
Di-n-butylphthalate	400 U	380 U <sup>v</sup>	57 *	430 U <sup>v</sup>	100 *	400 U	400 U *
Fluoranthene	400 U	380 U <sup>v</sup>	110 *	430 U <sup>v</sup>	430 U *	400 U	400 U *
Pyrene	400 U	560 J	590 *	430 U <sup>v</sup>	430 U *	25 J	400 U *
Butylbenzylphthalate	400 U	380 U <sup>v</sup>	380 U *	100 J	430 U *	53 J	56 *
3,3'-Dichlorobenzidine	400 U	380 U <sup>v</sup>	380 U *	430 U <sup>v</sup>	430 U *	400 U <sup>v</sup>	400 U *
Benzo(a)anthracene	400 U	300 J	280 *	90 J	430 U *	400 U <sup>v</sup>	400 U *
Chrysene	400 U	590 J	670 *	430 U <sup>v</sup>	110 *	41 J	40 *
bis(2-Ethylhexyl)phthalate	400 U	380 U <sup>v</sup>	380 U *	430 U <sup>v</sup>	430 U *	400 U <sup>v</sup>	62 *
Di-n-octylphthalate	400 U	380 U <sup>v</sup>	380 U *	27 J	430 U *	400 U <sup>v</sup>	400 U *
Benzo(b)fluoranthene	400 U	230 J	210 *	430 U <sup>v</sup>	430 U *	400 U <sup>v</sup>	400 U *
Benzo(k)fluoranthene	400 U	380 U <sup>v</sup>	58 *	430 U <sup>v</sup>	430 U *	400 U <sup>v</sup>	400 U *
Benzo(a)pyrene	400 U	250 J	240 *	150 J	160 *	400 U <sup>v</sup>	400 U *
Indeno(1,2,3-cd)pyrene	400 U	380 U <sup>v</sup>	380 U *	430 U <sup>v</sup>	430 U *	400 U <sup>v</sup>	400 U *
Dibenz(a,h)anthracene	400 U	380 U <sup>v</sup>	380 U *	430 U <sup>v</sup>	430 U *	400 U <sup>v</sup>	400 U *
Benzo(g,h,i)perylene	400 U	440 J	380 U *	430 U <sup>v</sup>	430 U *	400 U <sup>v</sup>	400 U *
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	13	13	24	24	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	22	35	35	35	35	29	22

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PFG02

Reviewer: M. Missier

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G18	FF-G18RE	FF-G21	FF-G21RE	FF-G22	FF-G22RE	FF-G23
✓ Phenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ Bis(2-Chloroethyl)ether	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 2-Chlorophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 1,3-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 1,4-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 1,2-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 2-Methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 2,2'-Oxybis(1-chloropropane)	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 4-Methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ N-Nitroso-di-n-propylamine	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ Hexachloroethane	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ Nitrobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ Sphorine	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 2-Nitrophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 2,4-Dimethylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ Bis(2-Chloroethoxy)methane	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 2,4-Dichlorophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 1,2,4-Trichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ Naphthalene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 4-Chloroaniline	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ Hexachlorocyclopentadiene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 4-Chloro-3-methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 2-Methylnaphthalene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ Hexachlorocyclopentadiene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
✓ 2,4,6-Trichlorophenol	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ 2,4,5-Trichlorophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U ✓
✓ 2-Chloronaphthalene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ 2-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U ✓
✓ Dimethylphthalate	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ Acenaphthylene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ 2,6-Dinitrotoluene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ 3-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U ✓
✓ Acenaphthene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ 2,4-Dinitrophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U ✓
✓ 4-Nitrophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U ✓
✓ Dibenzofuran	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ 2,4-Dinitrotoluene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ Diethylphthalate	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ 4-Chlorophenyl-phenylether	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ Fluorene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
✓ 4-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U ✓
✓ 4,6-Dinitro-2-methylphenol	1000 U	1000 U *	1000 U	1000 U *	1000 UJv	1000 U *	1000 U ✓
✓ N-Nitrosodiphenylamine	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
✓ 4-Bromophenyl-phenylether	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
✓ Hexachlorobenzene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
✓ Pentachlorophenol	1000 U	1000 U *	1000 U	1000 U *	1000 UJv	1000 U *	1000 U ✓
✓ Phenanthrene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	25 U ✓
✓ Anthracene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missier

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G19	FF-G19RE	FF-G21	FF-G21RE	FF-G22	FF-G22RE	FF-G23
/Carbazole	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
/Di-n-butylphthalate	400 U	400 U *	30 J✓	27 *	400 UJv	400 U *	400 U
/Fluoranthene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
/Pyrene	38 J	400 U *	25 J✓	400 U *	400 UJv	400 U *	94 J✓
/Butylbenzylphthalate	45 J	51 *	35 J✓	400 U *	400 UJv	400 U *	59 J✓
/3,3'-Dichlorobenzidine	400 UJv	400 U *	400 UJv✓	400 U *	400 UJv	400 U *	400 UJv✓
/Benzo(a)anthracene	400 UJv	400 U *	400 UJv✓	400 U *	400 UJv	400 U *	400 UJv✓
/Chrysene	26 J	26 *	22 J✓	400 U *	400 UJv	400 U *	82 J✓
/Bis(2-Ethylhexyl)phthalate	400 UJv	83 *	400 UJv✓	87 *	400 UJv	400 U *	400 UJv✓
/Di-n-octylphthalate	400 UJv	400 U *	400 UJv✓	400 U *	400 UJv	400 U *	400 UJv✓
/Benzo(b)fluoranthene	400 UJv	400 U *	400 UJv✓	400 U *	400 UJv	400 U *	31 J✓
/Benzo(k)fluoranthene	400 UJv	400 U *	400 UJv✓	400 U *	400 UJv	400 U *	26 J✓
/Benzo(a)pyrene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	54 J✓
/Benzo(1,2,3-cd)pyrene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	51 J✓
/Dibenz(a,h)anthracene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	26 J✓
/Benzo(g,h,i)perylene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	190 J✓
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	18	18	18	18	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	25	17	27	19	31	26	26

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER: FF-G23RE							
Phenol	400 U *						
bis(2-Chloroethyl) ether	400 U *						
2-Chlorophenol	400 U *						
1,3-Dichlorobenzene	400 U *						
1,4-Dichlorobenzene	400 U *						
1,2-Dichlorobenzene	400 U *						
2-Methylphenol	400 U *						
2,2'-Oxybis(1-chloropropane)	400 U *						
4-Methylphenol	400 U *						
N-Nitroso-di-n-propylamine	400 U *						
Hexachloroethane	400 U *						
Nitrobenzene	400 U *						
Isophorone	400 U *						
2-Nitrophenol	400 U *						
2,4-Dimethylphenol	400 U *						
bis(2-Chloroethoxy)methane	400 U *						
2,4-Dichlorophenol	400 U *						
1,2,4-Trichlorobenzene	400 U *						
Naphthalene	400 U *						
4-Chloroaniline	400 U *						
Hexachlorobutadiene	400 U *						
4-Chloro-3-methylphenol	400 U *						
2-Methylnaphthalene	400 U *						
Hexachlorocyclopentadiene	400 U *						
2,4,6-Trichlorophenol	400 U *						
2,4,5-Trichlorophenol	1000 U *						
2-Chloronaphthalene	400 U *						
2-Nitroaniline	1000 U *						
Dimethylphthalate	400 U *						
Acenaphthylene	400 U *						
2,6-Dinitrotoluene	400 U *						
3-Nitroaniline	1000 U *						
Acenaphthene	400 U *						
2,4-Dinitrophenol	1000 U *						
4-Nitrophenol	1000 U *						
Dibenzofuran	400 U *						
2,4-Dinitrotoluene	400 U *						
Diethylphthalate	400 U *						
4-Chlorophenyl-phenylether	400 U *						
Fluorene	400 U *						
4-Nitroaniline	1000 U *						
4,6-Dinitro-2-methylphenol	1000 U *						
N-Nitrosodiphenylamine	400 U *						
4-Bromophenyl-phenylether	400 U *						
Hexachlorobenzene	400 U *						
Pentachlorophenol	1000 U *						
Phenanthrene	35 *						
Anthracene	400 U *						

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

MATRIX: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G23RE						
Carbazole	400 U *						
Di-n-butylphthalate	23 *						
Fluoranthene	23 *						
Pyrene	90 *						
Butylbenzylphthalate	81 *						
3,3'-Dichlorobenzidine	400 U *						
Benzo(a)anthracene	400 U *						
Chrysene	77 *						
bis(2-Ethylhexyl)phthalate	79 *						
Di-n-octylphthalate	400 U *						
Benzo(b)fluoranthene	35 *						
Benzo(k)fluoranthene	41 *						
Benzo(a)pyrene	60 *						
Indeno(1,2,3-cd)pyrene	29 *						
Dibenz(a,h)anthracene	400 U *						
Benzo(g,h,i)perylene	113 *						
Sample wt (g):	30						
%Moisture:	18						
Dilution Factor:	1						
Level:	LOW						
Number of TIC's:	35						

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G07	FF-G08
alpha-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
beta-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
delta-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
gamma-BHC (lindane)	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Heptachlor	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Aldrin	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Heptachlor epoxide	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Endosulfan I	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Dieldrin	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDE	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endrin	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endosulfan II	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDD	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endosulfan sulfate	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDT	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Methoxychlor	21 U	20 U	22 U	21 U	22 U	23 U	22 U
Endrin ketone	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endrin aldehyde	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
alpha-Chlordane	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
gamma-Chlordane	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Toxaphene	210 U	200 U	220 U	210 U	220 U	230 U	220 U
Aroclor-1016	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1221	82 U	80 U	85 U	83 U	86 U	89 U	87 U
Aroclor-1232	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1242	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1248	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1254	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1260	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	16	21	19	22	25	23
Dilution Factor:	1	1	1	1	1	1	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBS	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-G12	FF-G13	FF-G14	FF-G15
alpha-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
beta-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
delta-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
gamma-BHC (lindane)	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Heptachlor	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.5	2.0 U
Aldrin	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Heptachlor epoxide	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Endosulfan I	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	4.0 U	3.8 U
Dieldrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
4,4'-DDE	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	7.5 U
Endrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	7.9
Endosulfan II	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
4,4'-DDD	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	10 U
Endosulfan sulfate	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
4,4'-DDT	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
Methoxychlor	24 U	21 U	21 U	21 U	20 U	21 U	20 U
Endrin ketone	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	14 U
Endrin aldehyde	4.6 U	4.0 U	4.1 U	4.7 U	3.8 U	4.0 U	3.8 U
alpha-Chlordane	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	3.6 U
gamma-Chlordane	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	5.7
Toxaphene	240 U	210 U	210 U	210 U	200 U	210 U	200 U
Aroclor-1016	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1221	94 U	82 U	83 U	84 U	78 U	82 U	77 U
Aroclor-1232	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1242	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1248	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1254	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1260	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	29	18	19	20	14	18	13
Dilution Factor:	1	1	1	1	1	1	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G16	FF-G17	FF-G18	FF-G21	FF-G22	FF-G23	
alpha-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	✓
beta-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
delta-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
gamma-BHC (lindane)	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Heptachlor	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Aldrin	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Heptachlor epoxide	2.2 U	2.1	2.9	2.1 U	2.1 U	2.1 U	
Endosulfan I	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Dieldrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
4,4'-DDE	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	✓
Endrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endosulfan II	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
4,4'-DDD	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endosulfan sulfate	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	5.6 UJ	
4,4'-DDT	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Hechoxychlor	22 U	21 U	21 U	21 U	21 U	21 U	
Endrin ketone	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endrin aldehyde	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
alpha-Chlordane	2.2 U	2.2 U	3.6 U	2.1 U	2.1 U	2.1 U	
gamma-Chlordane	2.2 U	2.3 UJ	5.9 B	2.1 U	2.1 U	2.1 U	
Toxaphene	220 U	210 U	210 U	210 U	210 U	210 U	
Aroclor-1016	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1221	88 U	82 U	82 U	82 U	82 U	82 U	
Aroclor-1232	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1242	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1248	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1254	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1260	43 U	40 U	40 U	40 U	40 U	40 U	
Sample wt (g):	30	30	30	30	30	30	
%Moisture:	24	18	18	18	18	18	
Dilution Factor:	1	1	1	1	1	1	

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

# INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 25159 SDG No. FFG02 SDG Nos. To Follow \_\_\_\_\_ SAS No. \_\_\_\_\_ Date Rec 12/27/96

EPA Lab ID: <u>AATS</u> Lab Location: <u>Broken Arrow, OK 74012</u> Region: <u>6</u> Audit No.: <u>25159/FFG02</u> Re_Submitted CSF? Yes _____ No <u>X</u> Box No(s): <u>1</u> COMMENTS:  3 The reviewer clarified the numbering scheme as follows: SDG narrative was pages 1-35B; SDG cover sheet/TR were pages 35C-38; Forms VIII VOA were pages 362-367; and VOA standards data were pages 178-361.  13 No airbills were available as the samples were delivered in person.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">ORIGINALS</th> <th style="text-align: center;">YES</th> <th style="text-align: center;">NO</th> <th style="text-align: center;">N/A</th> </tr> <tr> <td colspan="4"><b>CUSTODY SEALS</b></td> </tr> <tr> <td>1. Present on package?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>2. Intact upon receipt?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>FORM DC-2</b></td> </tr> <tr> <td>3. Numbering scheme accurate?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>4. Are enclosed documents listed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>5. Are listed documents enclosed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>FORM DC-1</b></td> </tr> <tr> <td>6. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>7. Complete?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>8. Accurate?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>CHAIN-OF-CUSTODY RECORD(s)</b></td> </tr> <tr> <td>9. Signed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>10. Dated?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>TRAFFIC REPORT(s) PACKING LIST(s)</b></td> </tr> <tr> <td>11. Signed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>12. Dated?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>AIRBILLS/AIRBILL STICKER</b></td> </tr> <tr> <td>13. Present?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td>14. Signed?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td>15. Dated?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td colspan="4"><b>SAMPLE TAGS</b></td> </tr> <tr> <td>16. Does DC-1 list tags as being included?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>17. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>OTHER DOCUMENTS</b></td> </tr> <tr> <td>18. Complete?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>19. Legible?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>20. Original?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>20a. If "NO", does the copy indicate where original documents are located?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> </table>	ORIGINALS	YES	NO	N/A	<b>CUSTODY SEALS</b>				1. Present on package?	X			2. Intact upon receipt?	X			<b>FORM DC-2</b>				3. Numbering scheme accurate?		X		4. Are enclosed documents listed?	X			5. Are listed documents enclosed?	X			<b>FORM DC-1</b>				6. Present?	X			7. Complete?	X			8. Accurate?	X			<b>CHAIN-OF-CUSTODY RECORD(s)</b>				9. Signed?	X			10. Dated?	X			<b>TRAFFIC REPORT(s) PACKING LIST(s)</b>				11. Signed?	X			12. Dated?	X			<b>AIRBILLS/AIRBILL STICKER</b>				13. Present?			X	14. Signed?			X	15. Dated?			X	<b>SAMPLE TAGS</b>				16. Does DC-1 list tags as being included?	X			17. Present?	X			<b>OTHER DOCUMENTS</b>				18. Complete?	X			19. Legible?	X			20. Original?		X		20a. If "NO", does the copy indicate where original documents are located?	X		
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Over for additional comments.

Audited by: <u>Maria Missler</u>	Maria Missler / ESAT Data Reviewer	Date <u>1/2/97</u>
Audited by: _____	_____	Date _____
Audited by: _____	_____	Date _____

Signature

Printed Name/Title

## TO BE COMPLETED BY CEAT

Date Recvd by CEAT: _____	Date Entered: _____	Date Reviewed: _____
Entered by: _____	_____	_____
Reviewed by: _____	_____	_____

Signature

Printed Name/Title

DC-2 \_\_\_\_\_

In Reference to Case No(s):  
25159 SDG: FFG02 (O-1780)

Contract Laboratory Program  
REGIONAL/LABORATORY COMMUNICATION SYSTEM  
FAX Record Log

Date of FAX: January 10, 1997  
Laboratory Name: AATS  
Lab Contact: Harry Borg

Region: 6  
Regional Contact: Maria Missler - ESAT

FAX initiated by: Laboratory X Region

In reference to data for the following fractions:

BNA Pest/PCB

Summary of Questions/Issues:

A. BNA

1. Sample FF-G11, Form I SV-TIC: The TIC's at 22.326 and 22.595 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
2. Sample FF-G17RE, Form I SV-TIC: The TIC's at 12.764 and 13.089 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
3. Sample FF-G16: On the quantitation report, the peak identified as benzo(a)anthracene better matches the retention time identification criteria for chrysene. Please correct and resubmit the quantitation and results reports.
4. The following peaks appear to meet the TIC intensity criteria but were not reported. Please revise Forms I SV-TIC to include these peaks or explain:

<u>Sample</u>	<u>Approximate peak RT (min)</u>
FF-G03	11.4, 12.0
FF-G04	4.95, 11.7, 12.2
FF-G07	4.4
FF-G10	7.6

5. Form V SV, page 464: According to the analysis log (page 2682), the sample analyzed on 12/12/96 at 0029 was identified as "FF-G01", not FF-G06 as reported on this form. Please clarify this discrepancy.

FAX COMMUNICATION LOG

Continuation Page 2  
Laboratory/Contact AATS / Harry Borg  
In Reference To Case No. 25159 SDG: FFG02

B. Pest/PCB

1. Forms VI PEST-2, pages 2327, 2328, 2329, and 2330: The reviewer was unable to reproduce the calibration factors reported for the two surrogates based on the raw data (pages 2396-2409 and 2449-2462). Please correct and resubmit these forms to match the raw data or demonstrate your calculations.
2. Method blank PBLKSC, page 2490: According to the SOW (OLM03.0, D-73/PEST, 12.1.2.4) the method blank acceptance criteria apply independently to each analytical column. The integration report (page 2490) shows the presence of endosulfan sulfate on column DB-17 above the CRQL. Please comment on this non-compliance.

NOTE: Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM03.0, p. B-29), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 7 days to:

Mr. Mahmoud El-Feky  
U.S. EPA Region 6 Laboratory  
10625 Fallstone Road  
Houston, TX 77099

If you have any questions, please contact me at (713) 988-2995.

Mario Kliss/er  
Signature

January 10, 1997  
Date

Distribution: (1) Lab Copy (2) Region Copy



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE RD.  
HOUSTON, TEXAS 77099

**MEMORANDUM**

Date: 1-21-1997  
Subject: Contract Laboratory Program Data Review  
From: *M. L. Ritter*  
Melvin L. Ritter, ESAT RPO, GMD-HC  
To: L. Biasco, 6SF-RA

Site: WILCOX OIL  
Case#: 25159  
SDG#: FF-G02

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program ( CLP ) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- ( ) Acceptable: No major problems with data package.
- (X) Provisional: Use of data requires caution.  
Data is acceptable for Regional use. Problems are noted in the review report.
- ( ) Unacceptable: Some or all of data should not be used.  
Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

**Attachments**

cc: R. Flores, Region 6 CLP/TPO  
M. El-feky, Region 6 Data Coordinator

Files (2)



Recycled/Recyclable  
Printed with Soy/Candela Ink on paper that  
contains at least 50% recycled fiber



LOCKHEED MARTIN SERVICES GROUP  
10101 Southwest Freeway, Suite 500  
HOUSTON, TX 77074

MEMORANDUM

DATE: January 10, 1997  
TO: Dr. Melvin Ritter, ESAT RPO, Region VI  
FROM: Dr. Tom C. H. Chiang, ESAT ETM, Region VI *Dr. C.H. Chiang*  
SUBJECT: CLP Data Review  
REF: TDF # 6-7113A  
ESAT # O-1780

Attached is the data review summary for Case # 25159  
SDG # FEG02  
Site Wilcox Oil

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF THE DATA PACKAGE

- A. The data package contained the following contractual non-compliance as determined by the hard copy data review and the CCS audit.

The laboratory extracted BNA sample FF-G06RE 29 days after sample receipt (OLM03.0, D-18/SVOA, 8.4.1). All results were qualified for this sample because of the excessive holding time.

- B. The data package contained the following contractual non-compliance as determined by the hard copy data review but not by CCS.

1. Pest/PCB method blank PBLKSC had a peak on the DB-17 column above the CRQL that interfered with the detection of endosulfan sulfate (OLM03.0, D-73/PEST, 12.1.2.4). This deficiency caused the raised quantitation limits for endosulfan sulfate in samples FF-G15 and FF-G23.
2. The data package arrived three days late.

II. TECHNICAL/USABILITY ASSESSMENT OF THE DATA PACKAGE

A total of 2,500 results were reviewed for this data package. The data package is technically provisional and technical deficiencies are listed below.

1. One BNA sample was extracted 29 days after sample collection.
2. Four VOA and eight BNA samples had low internal standard responses.

## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

## REGION 6

## HOUSTON BRANCH

10625 FALLSTONE ROAD

HOUSTON, TEXAS 77099

## ORGANIC REGIONAL DATA ASSESSMENT

CASE NO.	25159	SITE	Wilcox Oil
LABORATORY	AATS	NO. OF SAMPLES	20
CONTRACT#	68-D5-0022	MATRIX	Soil
SDG#	FFG02	REVIEWER (IF NOT ESD)	ESAT
SOW#	RAS SOW OLM03.2	REVIEWER'S NAME	Maria Missler
ACCT#	7FAXJN28	SF#	FAXUZZ
		COMPLETION DATE	January 10, 1997

SAMPLE NO.	FF-G02	FF-G06	FF-G10	FF-G14	FF-G18
	FF-G03	FF-G07	FF-G11	FF-G15	FF-G21
	FF-G04	FF-G08	FF-G12	FF-G16	FF-G22
	FF-G05	FF-G09	FF-G13	FF-G17	FF-G23

## DATA ASSESSMENT SUMMARY

	VOA	BNA	PEST
1. HOLDING TIMES	O	M	O
2. GC/MS TUNE/INSTR. PERFORM.	O	O	O
3. CALIBRATIONS	M	O	O
4. BLANKS	O	O	M
5. SMC/SURROGATES	O	O	O
6. MATRIX SPIKE/DUPLICATE	O	O	O
7. OTHER QC	M	O	O
8. INTERNAL STANDARDS	M	M	N/A
9. COMPOUND ID/QUANTITATION	O	O	M
10. PERFORMANCE/COMPLETENESS	O	O	O
11. OVERALL ASSESSMENT	M	M	M

O = Data had no problems.

M = Data qualified because of major or minor problems.

Z = Data unacceptable.

NA = Not applicable.

**ACTION ITEMS:** BNA sample FF-G06RE was extracted 19 days past the holding time requirement. One Pest/PCB method blank had a peak that interfered with the detection of endosulfan sulfate above the CRQL on one column.

**AREA OF CONCERN:** The extraction holding time was excessive for BNA sample FF-G06RE. A contaminant in the method blank obscured the detection of endosulfan sulfate in two Pest/PCB samples. Acetone failed technical calibration criteria. Four VOA and eight BNA samples had low internal standard responses. Results were inconsistent for a pair of field duplicates. The two column quantitation results differed by more than 25 percent for three Pest/PCB samples. The data package arrived three days late.

COMMENTS/CLARIFICATIONS  
REGION 6 CLP QA REVIEW

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

<u>No.</u>	<u>Acceptable</u>	<u>Provisional</u>	<u>Unacceptable</u>
VOA	<u>14</u>	<u>6</u>	<u></u>
BNA	<u>11</u>	<u>9</u>	<u></u>
PEST	<u>16</u>	<u>4</u>	<u></u>

**COMMENTS:** The case consisted of 20 soil samples for complete RAS organic analysis. The OTR/COC Record designated sample FF-G02 for MS/MSD analyses and samples FF-G07/FF-G08, FF-G17/FF-G18, and FF-G22/FF-G23 as field duplicate pairs. The laboratory analyzed at low levels the VOA/BNA soil samples.

The data package contained the following contractual non-compliances.

BNA sample FF-G06RE was extracted 19 days past the contractual holding time limit. Only sample FF-G06RE is billable even though the laboratory also submitted data for the original analysis FF-G06.

The Pest/PCB method blank PBLKSC had a peak interfering with the detection of endosulfan sulfate above the CRQL on one column.

The data package arrived 3 days late for the contractual 35-day turnaround time.

**VOA** Samples FF-G11, FF-G13, FF-G15, and FF-G22 and their reanalyses had low internal standard responses. The reanalyses should be used for all except sample FF-G15.

**BNA** The extraction holding time for sample FF-G06RE was excessive (29 days past collection). Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had low internal standard responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated internal standard performance.

**Pest/PCB** An interfering contaminant in the method blank obscured the detection of endosulfan sulfate in samples FF-G15 and FF-G23.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

Comments (continued)

Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Some results are provisional for six VOA, nine BNA, and four Pest/PCB samples because of problems with holding time, calibration, blank contamination, field duplicate consistency, internal standard responses, and compound quantitation.

The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Tables. An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

**NOTE:** THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

**1. Holding Times:** Provisional. All samples met the contractual holding time requirement except as follows. No technical holding time criteria exist for soil samples.

BNA sample FF-G06RE was extracted 29 days after collection and receipt. In the reviewer's opinion, all results are estimated and biased low because of the excessive holding time.

**2. Tuning/Performance:** Acceptable. The BFB and DFTPP analyses met GC/MS tuning criteria. The VOA and BNA sample analyses were within 12 hours of the respective BFB/DFTPP analyses. The Pest/PCB analyses met performance guidelines.

**3. Calibrations:** Provisional. Target compounds met contractual calibration criteria. The acetone result is estimated in VOA sample FF-G17 because of a technical %D calibration deficiency.

**Pest/PCB** The reviewer was unable to reproduce the following calibration results on both analytical columns based on the raw data submitted:

the TCX and DCB initial calibration factors; and

the TCX and DCB calculated amounts in all INDAM/INDBM calibration verification analyses.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

3. Calibrations, Pest/PCB (continued)

The results reported by the laboratory differed consistently by a factor of two from the reviewer-calculated ones. The reviewer did not qualify results because the reported %RSD and %D values were not affected. However, the laboratory was contacted for clarification of this discrepancy.

4. Blanks: Provisional. The VOA and BNA method and storage blanks met contractual requirements.

**BNA** The method blanks contained phthalates below the CRQL's. In the reviewer's opinion, all "B"-flagged laboratory results should be considered as undetected (U) because the sample concentrations were less than 10X the associated blank concentrations.

**Pest/PCB** Soil method blank PBLKSC contained a peak above the CRQL that interfered with the identification of endosulfan sulfate on one column. The reviewer qualified as undetected the endosulfan sulfate results in associated samples FF-G15 and FF-G23 because of possible laboratory contamination.

In the reviewer's opinion, the following results should be used as raised quantitation limits because of the presence of the analyte in the associated method blanks (below the CRQL's) on one or both columns:

endrin aldehyde in sample FF-G12; and

γ-chlordane in sample FF-G17.

The γ-chlordane result in sample FF-G18 is biased high and "B" flagged because of possible laboratory contamination.

5. System Monitoring Compounds (SMC)/Surrogates: Acceptable. The SMC and surrogate recoveries met QC criteria except as follows.

**BNA** Sample FF-G06 had high recoveries for two base-neutral surrogates. The re-extraction had acceptable recoveries and should be used.

Samples FF-G17RE, FF-G18RE, FF-G21RE, and FF-G22RE had high recoveries for two base-neutral surrogates. No results were qualified for the high recoveries as no analytes were detected above the CRQL's in these samples.



ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

5. System Monitoring Compounds (SMC)/Surrogates (continued)

Pest/PCB All reported surrogate recoveries were a factor of two lower than the reviewer-calculated ones. This problem is a consequence of the incorrect calibration factors reported for the initial calibrations (see section 3). All surrogate recoveries were within QC limits based on the reviewer's calculations.

6. Matrix Spike/Matrix Spike Duplicate: Acceptable. The MS/MSD analyses met recovery and precision requirements for all fractions.

7. Other QC:

Field Duplicates: Provisional. The acetone and methylene chloride results are estimated in field duplicates FF-G17 and FF-G18 because of inconsistent concentrations (differ by a factor of two or more). Other field duplicate results were consistent.

8. Internal Standards: Provisional. The internal standard (IS) responses and retention times were within the QC limits with the following exceptions.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 were reanalyzed because of low IS responses. The reanalyses had low but improved responses for samples FF-G11, FF-G13, and FF-G22, so the reanalysis data should be used. The original analysis data should be used for sample FF-G15.

Results are estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

<u>Sample</u>	<u>IS</u>
FF-G11RE	IS3
FF-G13RE	IS1, IS3
FF-G15	IS2, IS3
FF-G22RE	IS3

BNA Sample FF-G06 had low internal standard responses, but the reanalysis had acceptable responses, and data should be used. Sample FF-G02MSD had one low IS response, but reanalysis was not required.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

8. Internal Standards, BNA (continued)

Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had outlying IS responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated IS performance. The results designated for use are indicated on the attached data summary tables.

The reviewer qualified results as estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

<u>Sample</u>	<u>IS</u>
FF-G09	IS6
FF-G15	IS4, IS5, IS6
FF-G16	IS4, IS5, IS6
FF-G17	IS5, IS6
FF-G18	IS5, IS6
FF-G21	IS5, IS6
FF-G22	IS4, IS5, IS6
FF-G23	IS5, IS6

9. Compound Identity/Quantitation: Provisional. Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)-perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Compound identification and quantitation met contractual guidelines for the VOA and BNA samples. GC/MS confirmation was not feasible for the Pest/PCB positive results.

Pest/PCB The "P" flagged results above CRQL's are estimated in samples FF-G15, FF-G17, FF-G18, and FF-G23 because the quantitation results between the two columns differ by more than 25 percent.

10. Performance/Completeness: Acceptable. The laboratory response to the CCS request was received and should be used. The data package was complete with minor deficiencies. The laboratory was contacted for correction and resubmission (see attached FAX Record Log).

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

11. Overall Assessment: Data are acceptable for 14 VOA, 11 BNA, and 16 Pest/PCB samples.

VOA Some results are estimated for samples FF-G11RE, FF-G13RE, FF-G15, FF-G17, FF-G18, and FF-G22RE because of a calibration deficiency, inconsistent field duplicate results, and low internal standard responses.

BNA Some results are estimated for samples FF-G06RE, FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 because of a holding time problem and low internal standard responses.

Pest/PCB Some results are estimated for samples FF-G15, FF-G17, FF-G18, and FF-G23 because of blank contamination and compound quantitation deficiencies.

## ORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the Data Summary Table.

- U Not detected at reported quantitation limit.
- N Identification is tentative.
- J Estimated value.
- R Unusable.
- ^ High biased. Actual concentration may be lower than the concentration reported.
- v Low biased. Actual concentration may be higher than the concentration reported.
- F+ A false positive exists.
- F- A false negative exists.
- B This result may be high biased because of laboratory/field contamination. The reported concentration is above 5X or 10X the concentration reported in the method/field blank.
- UJ Estimated quantitation limit.
- T Identification is questionable because of absence of other commonly coexisting pesticides.
- \* Result not recommended for use because of associated QA/QC performance inferior to that from other analysis.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G07	FF-G08
Chloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromomethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Vinyl chloride	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Methylene chloride	1 J	1 J	2 J	2 J	13 U	13 U	2 J
Acetone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Carbon disulfide	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1-Dichloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1-Dichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloroethene (total)	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chloroform	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
2-Butanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,1-Trichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Carbon tetrachloride	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromodichloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloropropane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
cis-1,3-Dichloropropene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Trichloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Dibromochloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,2-Trichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Benzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
trans-1,3-Dichloropropene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromoform	12 U	12 U	13 U	12 U	13 U	13 U	13 U
4-Methyl-2-pentanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
2-Hexanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Tetrachloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,2,2-Tetrachloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Toluene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chlorobenzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Ethylbenzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Styrene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Xylenes (total)	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	18	16	21	19	22	25	23
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	1	1	1	1	1	0	0

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FPG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-G11RE	FF-G12	FF-G13	FF-G13RE
Chloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Bromomethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Vinyl chloride	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Chloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Methylene chloride	5 J	12 U	5 *	12 U	12 U	12 U *	28 J
Acetone	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Carbon disulfide	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,1-Dichloroethene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,1-Dichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,2-Dichloroethene (total)	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Chloroform	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,2-Dichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
2-Butanone	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,1,1-Trichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Carbon tetrachloride	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Bromodichloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
1,2-Dichloropropane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
cis-1,3-Dichloropropene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Trichloroethene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Dibromochloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
1,1,2-Trichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Benzene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
trans-1,3-Dichloropropene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Bromoform	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
4-Methyl-2-pentanone	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
2-Hexanone	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Tetrachloroethene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
1,1,2,2-Tetrachloroethane	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Toluene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Chlorobenzene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Ethylbenzene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Styrene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Xylenes (total)	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	29	18	19	19	20	14	14
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	0	0	0	0	0	0	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G17	FF-G18	FF-G21
Chloromethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Bromomethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Vinyl chloride	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Chloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Methylene chloride	12 U	2 J	11 U *	13 U	23 J	12 UJ	12 U
Acetone	12 U	11 U	11 U *	13 U	48 J	12 UJ	12 U
Carbon disulfide	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1-Dichloroethene	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1-Dichloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloroethene (total)	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Chloroform	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
2-Butanone	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1,1-Trichloroethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Carbon tetrachloride	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Bromodichloromethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloropropane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
cis-1,3-Dichloropropene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Trichloroethene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Dibromochloromethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
1,1,2-Trichloroethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Benzene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
trans-1,3-Dichloropropene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Bromoform	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
4-Methyl-2-pentanone	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
2-Hexanone	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Tetrachloroethene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
1,1,2,2-Tetrachloroethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Toluene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Chlorobenzene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Ethylbenzene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Styrene	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Xylenes (total)	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	18	13	13	24	18	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	0	0	0	0	0	0	0

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G22	FF-G22RE	FF-G23				
Chloromethane	12 U *	12 U	12 U				
Bromomethane	12 U *	12 U	12 U				
Vinyl chloride	12 U *	12 U	12 U				
Chloroethane	12 U *	12 U	12 U				
Methylene chloride	5 *	12 U	12 U				
Acetone	12 U *	12 U	12 U				
Carbon disulfide	12 U *	12 U	12 U				
1,1-Dichloroethene	12 U *	12 U	12 U				
1,1-Dichloroethane	12 U *	12 U	12 U				
1,2-Dichloroethene (total)	12 U *	12 U	12 U				
Chloroform	12 U *	12 U	12 U				
1,2-Dichloroethane	12 U *	12 U	12 U				
2-Butanone	12 U *	12 U	12 U				
1,1,1-Trichloroethane	12 U *	12 U	12 U				
Carbon tetrachloride	12 U *	12 U	12 U				
Bromodichloromethane	12 U *	12 U	12 U				
1,2-Dichloropropane	12 U *	12 U	12 U				
cis-1,3-Dichloropropene	12 U *	12 U	12 U				
Trichloroethene	12 U *	12 U	12 U				
Dibromochloromethane	12 U *	12 U	12 U				
1,1,2-Trichloroethane	12 U *	12 U	12 U				
Benzene	12 U *	12 U	12 U				
trans-1,3-Dichloropropene	12 U *	12 U	12 U				
Bromoform	12 U *	12 U	12 U				
4-Methyl-2-pentanone	12 U *	12 UJv	12 U				
2-Hexanone	12 U *	12 UJv	12 U				
Tetrachloroethene	12 U *	12 UJv	12 U				
1,1,2,2-Tetrachloroethane	12 U *	12 UJv	12 U				
Toluene	12 U *	12 UJv	12 U				
Chlorobenzene	12 U *	12 UJv	12 U				
Ethylbenzene	12 U *	12 UJv	12 U				
Styrene	12 U *	12 UJv	12 U				
Xylenes (total)	12 U *	12 UJv	12 U				
Sample wt (g):	5	5	5				
%Moisture:	18	18	18				
Dilution Factor:	1	1	1				
Level:	LOW	LOW	LOW				
Number of TIC's:	0	0	0				

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G06RE	FF-G07
Phenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
bis(2-Chloroethyl)ether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Chlorophenol	400 U	390 U	42 J	410 U	420 U *	420 UJv	440 U
1,3-Dichlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
1,4-Dichlorobenzene	400 U	390 U	29 J	410 U	420 U *	420 UJv	440 U
1,2-Dichlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,2'-Oxybis(1-chloropropane)	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
N-Nitroso-di-n-propylamine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachloroethane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Nitrobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Isophorone	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitrophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dimethylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
bis(2-Chloroethoxy)methane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dichlorophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
1,2,4-Trichlorobenzene	400 U	390 U	27 J	410 U	420 U *	420 UJv	440 U
Naphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloroaniline	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachlorobutadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloro-3-methylphenol	400 U	390 U	34 J	410 U	420 U *	420 UJv	440 U
2-Methylnaphthalene	400 U	390 U	420 U	60 J	420 U *	420 UJv	440 U
Hexachlorocyclopentadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,6-Trichlorophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,5-Trichlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
2-Chloronaphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dimethylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Acenaphthylene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,6-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
3-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Acenaphthene	400 U	390 U	32 J	22 J	420 U *	420 UJv	440 U
2,4-Dinitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4-Nitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dibenzofuran	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Diethylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chlorophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Fluorene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4,6-Dinitro-2-methylphenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
N-Nitrosodiphenylamine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Bromophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Pentachlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Phenanthrene	400 U	390 U	420 U	220 J	46 *	420 UJv	440 U
Anthracene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G06RE	FF-G07
Carbazole	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Di-n-butylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Fluoranthene	400 U	390 U	420 U	130 J	420 U *	420 UJv	440 U
Pyrene	400 U	390 U	420 U	180 J	420 U *	420 UJv	440 U
Butylbenzylphthalate	35 J	36 J	34 J	57 J	420 U *	420 UJv	45 J
3,3'-Dichlorobenzidine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(a)anthracene	400 U	390 U	420 U	100 J	420 U *	420 UJv	440 U
Chrysene	400 U	390 U	420 U	150 J	420 U *	420 UJv	440 U
bis(2-Ethylhexyl)phthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Di-n-octylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(b)fluoranthene	400 U	390 U	420 U	90 J	420 U *	420 UJv	440 U
Benzo(k)fluoranthene	400 U	390 U	420 U	84 J	420 U *	420 UJv	440 U
Benzo(a)pyrene	400 U	390 U	420 U	100 J	420 U *	420 UJv	440 U
Indeno(1,2,3-cd)pyrene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Dibenz(1,h)anthracene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(g,h,i)perylene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	16	21	19	22	22	25
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	10	9	9	22	20	35	33

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09RE	FF-G10	FF-G11	FF-G12	FF-G13
Phenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
bis(2-Chloroethyl)ether	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Chlorophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,3-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,4-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,2-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,2'-Oxybis(1-chloropropane)	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
N-Nitroso-di-n-propylamine	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachloroethane	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Nitrobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Isophorone	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Nitrophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,4-Dimethylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
bis(2-Chloroethoxy)methane	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,4-Dichlorophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,2,4-Trichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Naphthalene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Chloroaniline	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachlorobutadiene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Chloro-3-methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Methylnaphthalene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachlorocyclopentadiene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4,6-Trichlorophenol	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4,5-Trichlorophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
2-Chloronaphthalene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Dimethylphthalate	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Acenaphthylene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,6-Dinitrotoluene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
3-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Acenaphthene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4-Dinitrophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
4-Nitrophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Dibenzofuran	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4-Dinitrotoluene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Diethylphthalate	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Chlorophenyl-phenylether	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Fluorene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
4,6-Dinitro-2-methylphenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
N-Nitrosodiphenylamine	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Bromophenyl-phenylether	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Hexachlorobenzene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Pentachlorophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Phenanthrene	210 U	460 U	460 U *	400 U	410 U	34 U	380 U
Anthracene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09RE	FF-G10	FF-G11	FF-G12	FF-G13
Carbazole	46 J	460 U	460 U *	400 U	410 U	410 U	380 U
Di-n-butylphthalate	430 U	460 U	460 U *	400 U	410 U	23 J	380 U
Fluoranthene	240 J	460 U	460 U *	400 U	410 U	68 J	380 U
Pyrene	170 J	49 J	43 *	400 U	410 U	62 J	380 U
Butylbenzylphthalate	48 J	29 J	32 *	400 U	25 J	21 J	380 U
3,3'-Dichlorobenzidine	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Benzo(a)anthracene	430 U	460 U	460 U *	400 U	410 U	36 J	380 U
Chrysene	96 J	49 J	44 *	400 U	410 U	50 J	380 U
bis(2-Ethylhexyl)phthalate	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Di-n-octylphthalate	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Benzo(b)fluoranthene	430 U	31 J	29 *	400 U	410 U	42 J	380 U
Benzo(k)fluoranthene	430 U	31 J	29 *	400 U	410 U	51 J	380 U
Benzo(a)pyrene	430 U	27 J	24 *	400 U	410 U	36 J	380 U
Indeno(1,2,3-cd)pyrene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Dibenz(a,h)anthracene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Benzo(g,h,i)perylene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	23	29	29	18	19	20	14
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	35	33	28	21	35	26	35

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G16RE	FF-G17	FF-G17RE
Phenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
bis(2-Chloroethyl) ether	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Chlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,3-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,4-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,2-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Methylphenol	400 U	380 U	380 U *	61 J	57 *	400 U *	400 U
2,2'-Oxybis(1-chloropropane)	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
4-Methylphenol	400 U	380 U	380 U *	94 J	100 *	400 U *	400 U
N-Nitroso-di-n-propylamine	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Hexachloroethane	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Nitrobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Isophorone	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Nitrophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2,4-Dimethylphenol	400 U	380 U	380 U *	360 J	380 *	400 U *	400 U
bis(2-Chloroethoxy)methane	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2,4-Dichlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,2,4-Trichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Naphthalene	400 U	81 J	380 U *	430 U	430 U *	400 U *	400 U
4-Chloroaniline	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Hexachlorocyclopentadiene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
4-Chloro-3-methylphenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Methylnaphthalene	400 U	200 J	180 *	430 U	430 *	400 U *	400 U
Hexachlorocyclopentadiene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4,6-Trichlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4,5-Trichlorophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
2-Chloronaphthalene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Dimethylnaphthalate	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Acenaphthylene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,6-Dinitrotoluene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
3-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Acenaphthene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4-Dinitrophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
4-Nitrophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Dibenzofuran	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4-Dinitrotoluene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Diethylphthalate	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
4-Chlorophenyl-phenylether	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Fluorene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
4-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
4,6-Dinitro-2-methylphenol	1000 U	950 UJv	950 U *	1100 UJv	1100 U *	1000 U	1000 U *
N-Nitrosodiphenylamine	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
4-Bromophenyl-phenylether	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
Hexachlorobenzene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
Pentachlorophenol	1000 U	950 UJv	950 U *	1100 UJv	1100 U *	1000 U	1000 U *
Phenanthrene	400 U	790 J	820 *	430 UJv	430 U *	400 U	400 U *
Anthracene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G16RE	FF-G17	FF-G17RE
Carbazole	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
Di-n-butylphthalate	400 U	380 UJv	57 *	430 UJv	100 *	400 U	400 U *
Fluoranthene	400 U	380 UJv	110 *	430 UJv	430 U *	400 U	400 U *
Pyrene	400 U	560 J	590 *	430 UJv	430 U *	25 J	400 U *
Butylbenzylphthalate	400 U	380 UJv	380 U *	100 J	430 U *	53 J	56 *
3,3'-Dichlorobenzidine	400 U	380 UJv	380 U *	430 UJv	430 U *	400 UJv	400 U *
Benzo(a)anthracene	400 U	300 J	280 *	90 J	430 U *	400 UJv	400 U *
Chrysene	400 U	690 J	670 *	430 UJv	110 *	41 J	40 *
bis(2-Ethylhexyl)phthalate	400 U	380 UJv	380 U *	430 UJv	430 U *	400 UJv	62 *
Di-n-octylphthalate	400 U	380 UJv	380 U *	27 J	430 U *	400 UJv	400 U *
Benzo(b)fluoranthene	400 U	230 J	210 *	430 UJv	430 U *	400 UJv	400 U *
Benzo(k)fluoranthene	400 U	380 UJv	58 *	430 UJv	430 U *	400 UJv	400 U *
Benzo(a)pyrene	400 U	250 J	240 *	150 J	160 *	400 UJv	400 U *
Indeno(1,2,3-cd)pyrene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 UJv	400 U *
Dibenz(a,h)anthracene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 UJv	400 U *
Benzo(g,h,i)perylene	400 U	440 J	380 U *	430 UJv	430 U *	400 UJv	400 U *
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	13	13	24	24	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	22	35	35	35	35	2°	22

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G18	FF-G18RE	FF-G21	FF-G21RE	FF-G22	FF-G22RE	FF-G23
Phenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
bis(2-Chloroethyl) ether	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Chlorophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,3-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,4-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,2-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,2'-Oxybis(1-chloropropane)	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
N-Nitroso-di-n-propylamine	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachloroethane	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Nitrobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Isophorone	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Nitrophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,4-Dimethylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
bis(2-Chloroethoxy) methane	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,4-Dichlorophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,2,4-Trichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Naphthalene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Chloroaniline	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachlorobutadiene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Chloro-3-methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Methylnaphthalene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachlorocyclopentadiene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4,6-Trichlorophenol	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4,5-Trichlorophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
2-Chloronaphthalene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Dimethylphthalate	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Acenaphthylene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,6-Dinitrotoluene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
3-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Acenaphthene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4-Dinitrophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
4-Nitrophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Dibenzofuran	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4-Dinitrotoluene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Diethylphthalate	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
4-Chlorophenyl-phenylether	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Fluorene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
4-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
4,6-Dinitro-2-methylphenol	1000 U	1000 U *	1000 U	1000 U *	1000 UJv	1000 U *	1000 U
N-Nitrosodiphenylamine	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
4-Bromophenyl-phenylether	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Hexachlorobenzene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Pentachlorophenol	1000 U	1000 U *	1000 U	1000 U *	1000 UJv	1000 U *	1000 U
Phenanthrene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	35 J
Anthracene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G18	FF-G18RE	FF-G21	FF-G21RE	FF-G22	FF-G22RE	FF-G23
Carbazole	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Di-n-butylphthalate	400 U	400 U *	30 J	27 *	400 UJv	400 U *	400 U
Fluoranthene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Pyrene	38 J	400 U *	26 J	400 U *	400 UJv	400 U *	94 J
Butylbenzylphthalate	45 J	51 *	35 J	400 U *	400 UJv	400 U *	59 J
3,3'-Dichlorobenzidine	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	400 UJv
Benzo(a)anthracene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	400 UJv
Chrysene	26 J	26 *	22 J	400 U *	400 UJv	400 U *	82 J
bis(2-Ethylhexyl)phthalate	400 UJv	83 *	400 UJv	87 *	400 UJv	400 U *	400 UJv
Di-n-octylphthalate	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	400 UJv
Benzo(b)fluoranthene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	31 J
Benzo(k)fluoranthene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	26 J
Benzo(a)pyrene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	54 J
Indeno(1,2,3-cd)pyrene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	51 J
Dibenz(a,h)anthracene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	26 J
Benzo(g,h,i)perylene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	190 J
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	18	18	18	18	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	25	17	27	19	31	26	26

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER: FF-G23RE							
Phenol	400	U	*				
bis(2-Chloroethyl) ether	400	U	*				
2-Chlorophenol	400	U	*				
1,3-Dichlorobenzene	400	U	*				
1,4-Dichlorobenzene	400	U	*				
1,2-Dichlorobenzene	400	U	*				
2-Methylphenol	400	U	*				
2,2'-Oxybis(1-chloropropane)	400	U	*				
4-Methylphenol	400	U	*				
N-Nitroso-di-n-propylamine	400	U	*				
Hexachloroethane	400	U	*				
Nitrobenzene	400	U	*				
Isophorone	400	U	*				
2-Nitrophenol	400	U	*				
2,4-Dimethylphenol	400	U	*				
bis(2-Chloroethoxy) methane	400	U	*				
2,4-Dichlorophenol	400	U	*				
1,2,4-Trichlorobenzene	400	U	*				
Naphthalene	400	U	*				
4-Chloroaniline	400	U	*				
Hexachlorobutadiene	400	U	*				
4-Chloro-3-methylphenol	400	U	*				
2-Methylnaphthalene	400	U	*				
Hexachlorocyclopentadiene	400	U	*				
2,4,6-Trichlorophenol	400	U	*				
2,4,5-Trichlorophenol	1000	U	*				
2-Chloronaphthalene	400	U	*				
2-Nitroaniline	1000	U	*				
Dimethylphthalate	400	U	*				
Acenaphthylene	400	U	*				
2,6-Dinitrotoluene	400	U	*				
3-Nitroaniline	1000	U	*				
Acenaphthene	400	U	*				
2,4-Dinitrophenol	1000	U	*				
4-Nitrophenol	1000	U	*				
Dibenzofuran	400	U	*				
2,4-Dinitrotoluene	400	U	*				
Diethylphthalate	400	U	*				
4-Chlorophenyl-phenylether	400	U	*				
Fluorene	400	U	*				
4-Nitroaniline	1000	U	*				
4,6-Dinitro-2-methylphenol	1000	U	*				
N-Nitrosodiphenylamine	400	U	*				
4-Bromophenyl-phenylether	400	U	*				
Hexachlorobenzene	400	U	*				
Pentachlorophenol	1000	U	*				
Phenanthrene	35		*				
Anthracene	400	U	*				

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G23RE						
Carbazole	400 U *						
Di-n-butylphthalate	28 *						
Fluoranthene	23 *						
Pyrene	90 *						
Butylbenzylphthalate	81 *						
3,3'-Dichlorobenzidine	400 U *						
Benzo(a)anthracene	400 U *						
Chrysene	77 *						
bis(2-Ethylhexyl)phthalate	79 *						
Di-n-octylphthalate	400 U *						
Benzo(b)fluoranthene	35 *						
Benzo(k)fluoranthene	41 *						
Benzo(a)pyrene	60 *						
Indeno(1,2,3-cd)pyrene	29 *						
Dibenz(a,h)anthracene	400 U *						
Benzo(g,h,i)perylene	110 *						
Sample wt (g):	30						
%Moisture:	18						
Dilution Factor:	1						
Level:	LOW						
Number of TIC's:	35						

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G07	FF-G08
alpha-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
beta-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
delta-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
gamma-BHC (lindane)	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Heptachlor	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Aldrin	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Heptachlor epoxide	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Endosulfan I	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Dieldrin	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDE	4.1 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endrin	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endosulfan II	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDD	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endosulfan sulfate	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDT	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Methoxychlor	21 U	20 U	22 U	21 U	22 U	23 U	22 U
Endrin ketone	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endrin aldehyde	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
alpha-Chlordane	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
gamma-Chlordane	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Toxaphene	210 U	200 U	220 U	210 U	220 U	230 U	220 U
Aroclor-1016	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1221	82 U	80 U	85 U	83 U	86 U	89 U	87 U
Aroclor-1232	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1242	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1248	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1254	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1260	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	16	21	19	22	25	23
Dilution Factor:	1	1	1	1	1	1	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-G12	FF-G13	FF-G14	FF-G15
alpha-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
beta-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
delta-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
gamma-BHC (lindane)	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Heptachlor	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.5	2.0 U
Aldrin	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Heptachlor epoxide	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Endosulfan I	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Dieldrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
4,4'-DDE	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
Endrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	7.5 J
Endosulfan II	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	7.9
4,4'-DDD	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
Endosulfan sulfate	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	10 UJ
4,4'-DDT	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
Methoxychlor	24 U	21 U	21 U	21 U	20 U	21 U	20 U
Endrin ketone	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	14 J
Endrin aldehyde	4.6 U	4.0 U	4.1 U	4.7 U	3.8 U	4.0 U	3.8 U
alpha-Chlordane	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	3.6 J
gamma-Chlordane	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	5.7
Toxaphene	240 U	210 U	210 U	210 U	200 U	210 U	200 U
Aroclor-1016	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1221	94 U	82 U	83 U	84 U	78 U	82 U	77 U
Aroclor-1232	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1242	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1248	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1254	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1260	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	29	18	19	20	14	18	13
Dilution Factor:	1	1	1	1	1	1	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G16	FF-G17	FF-G18	FF-G21	FF-G22	FF-G23
alpha-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
beta-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
delta-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
gamma-BHC (lindane)	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Heptachlor	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Aldrin	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Heptachlor epoxide	2.2 U	2.1	2.9	2.1 U	2.1 U	2.1 U
Endosulfan I	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Dieldrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
4,4'-DDE	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Endrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Endosulfan II	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
4,4'-DDD	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Endosulfan sulfate	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	5.6 UJ
4,4'-DDT	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Methoxychlor	22 U	21 U	21 U	21 U	21 U	21 U
Endrin ketone	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Endrin aldehyde	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
alpha-Chlordane	2.2 U	2.2 J	3.6 J	2.1 U	2.1 U	2.1 U
gamma-Chlordane	2.2 U	2.8 UJ	5.9 B	2.1 U	2.1 U	2.1 U
Toxaphene	220 U	210 U	210 U	210 U	210 U	210 U
Aroclor-1016	43 U	40 U	40 U	40 U	40 U	40 U
Aroclor-1221	88 U	82 U	82 U	82 U	82 U	82 U
Aroclor-1232	43 U	40 U	40 U	40 U	40 U	40 U
Aroclor-1242	43 U	40 U	40 U	40 U	40 U	40 U
Aroclor-1248	43 U	40 U	40 U	40 U	40 U	40 U
Aroclor-1254	43 U	40 U	40 U	40 U	40 U	40 U
Aroclor-1260	43 U	40 U	40 U	40 U	40 U	40 U
Sample wt (g):	30	30	30	30	30	30
%Moisture:	24	18	18	18	18	18
Dilution Factor:	1	1	1	1	1	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

# INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 25159 SDG No. FFG02 SDG Nos. To Follow \_\_\_\_\_ SAS No. \_\_\_\_\_ Date Rec 12/27/96

<p>EPA Lab ID: <u>AATS</u></p> <p>Lab Location: <u>Broken Arrow, OK 74012</u></p> <p>Region: <u>6</u> Audit No.: <u>25159/FFG02</u></p> <p>Re_Submitted CSF? Yes _____ No <u>X</u></p> <p>Box No(s): <u>1</u></p> <p>COMMENTS:</p> <p>3 The reviewer clarified the numbering scheme as follows: SDG narrative was pages 1-35B; SDG cover sheet/TR were pages 35C-38; Forms VIII VOA were pages 362-367; and VOA standards data were pages 178-361.</p> <p>13 No airbills were available as the samples were delivered in person.</p> <p>Over for additional comments.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">ORIGINALS</th> <th style="text-align: center;">YES</th> <th style="text-align: center;">NO</th> <th style="text-align: center;">N/A</th> </tr> </thead> <tbody> <tr> <td><b>CUSTODY SEALS</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1. Present on package?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>2. Intact upon receipt?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td><b>FORM DC-2</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Numbering scheme accurate?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>4. Are enclosed documents listed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>5. Are listed documents enclosed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td><b>FORM DC-1</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>7. Complete?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>8. Accurate?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td><b>CHAIN-OF-CUSTODY RECORD(s)</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9. Signed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>10. Dated?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td><b>TRAFFIC REPORT(s) PACKING LIST(s)</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>11. Signed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>12. Dated?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td><b>AIRBILLS/AIRBILL STICKER</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>13. Present?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td>14. Signed?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td>15. Dated?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td><b>SAMPLE TAGS</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>16. Does DC-1 list tags as being included?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>17. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td><b>OTHER DOCUMENTS</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>18. Complete?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>19. Legible?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>20. Original?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>20a. If "NO", does the copy indicate where original documents are located?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> </tbody> </table>	ORIGINALS	YES	NO	N/A	<b>CUSTODY SEALS</b>				1. Present on package?	X			2. Intact upon receipt?	X			<b>FORM DC-2</b>				3. Numbering scheme accurate?		X		4. Are enclosed documents listed?	X			5. Are listed documents enclosed?	X			<b>FORM DC-1</b>				6. Present?	X			7. Complete?	X			8. Accurate?	X			<b>CHAIN-OF-CUSTODY RECORD(s)</b>				9. Signed?	X			10. Dated?	X			<b>TRAFFIC REPORT(s) PACKING LIST(s)</b>				11. Signed?	X			12. Dated?	X			<b>AIRBILLS/AIRBILL STICKER</b>				13. Present?			X	14. Signed?			X	15. Dated?			X	<b>SAMPLE TAGS</b>				16. Does DC-1 list tags as being included?	X			17. Present?	X			<b>OTHER DOCUMENTS</b>				18. Complete?	X			19. Legible?	X			20. Original?		X		20a. If "NO", does the copy indicate where original documents are located?	X		
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Audited by: Maria Missler

Audited by: \_\_\_\_\_

Audited by: \_\_\_\_\_

Signature

Maria Missler / ESAT Data Reviewer

\_\_\_\_\_

\_\_\_\_\_

Printed Name/Title

Date 1/2/97

Date \_\_\_\_\_

Date \_\_\_\_\_

TO BE COMPLETED BY CEAT			
Date Recvd by CEAT: _____	Date Entered: _____	Date Reviewed: _____	
Entered by: _____	_____	_____	
Reviewed by: _____	_____	_____	
Signature	Printed Name/Title		

In Reference to Case No(s):  
25159 SDG: FFG02 (O-1780)

Contract Laboratory Program  
REGIONAL/LABORATORY COMMUNICATION SYSTEM  
FAX Record Log

Date of FAX: January 10, 1997  
Laboratory Name: AATS  
Lab Contact: Harry Borg

Region: 6  
Regional Contact: Maria Missler - ESAT

FAX initiated by: Laboratory X Region

In reference to data for the following fractions:

BNA Pest/PCB

Summary of Questions/Issues:

A. BNA

1. Sample FF-G11, Form I SV-TIC: The TIC's at 22.326 and 22.595 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
2. Sample FF-G17RE, Form I SV-TIC: The TIC's at 12.764 and 13.089 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
3. Sample FF-G16: On the quantitation report, the peak identified as benzo(a)anthracene better matches the retention time identification criteria for chrysene. Please correct and resubmit the quantitation and results reports.
4. The following peaks appear to meet the TIC intensity criteria but were not reported. Please revise Forms I SV-TIC to include these peaks or explain:

<u>Sample</u>	<u>Approximate peak RT (min)</u>
FF-G03	11.4, 12.0
FF-G04	4.95, 11.7, 12.2
FF-G07	4.4
FF-G10	7.6

5. Form V SV, page 464: According to the analysis log (page 2682), the sample analyzed on 12/12/96 at 0029 was identified as "FF-G01", not FF-G06 as reported on this form. Please clarify this discrepancy.

FAX COMMUNICATION LOG

Continuation Page 2  
Laboratory/Contact AATS / Harry Borg  
In Reference To Case No. 25159 SDG: FFG02

B. Pest/PCB

1. Forms VI PEST-2, pages 2327, 2328, 2329, and 2330: The reviewer was unable to reproduce the calibration factors reported for the two surrogates based on the raw data (pages 2396-2409 and 2449-2462). Please correct and resubmit these forms to match the raw data or demonstrate your calculations.
2. Method blank PBLKSC, page 2490: According to the SOW (OLM03.0, D-73/PEST, 12.1.2.4) the method blank acceptance criteria apply independently to each analytical column. The integration report (page 2490) shows the presence of endosulfan sulfate on column DB-17 above the CRQL. Please comment on this non-compliance.

**NOTE:** Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM03.0, p. B-29), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 7 days to:

Mr. Mahmoud El-Feky  
U.S. EPA Region 6 Laboratory  
10625 Fallstone Road  
Houston, TX 77099

If you have any questions, please contact me at (713) 988-2995.

Maria Kliss/er  
Signature

January 10, 1997  
Date

Distribution: (1) Lab Copy (2) Region Copy

LOCKHEED MARTIN SERVICES GROUP  
10101 Southwest Freeway, Suite 500  
HOUSTON, TX 77074

MEMORANDUM

DATE: January 10, 1997  
TO: Dr. Melvin Ritter, ESAT RPO, Region VI  
FROM: Dr. Tom C. H. Chiang, ESAT ETM, Region VI  
SUBJECT: CLP Data Review *Jan C. H. Chiang*  
REF: TDF # 6-7114A  
ESAT # O-1787

Attached is the data review summary for Case # 25159  
SDG # FFG24  
Site Wilcox Oil

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF THE DATA PACKAGE

- A. The data package contained the following contractual non-compliance as determined by the CCS audit and confirmed by hard copy data review.

The laboratory extracted BNA samples FF-G24 and FF-G24MS 12 days past the holding time limit, 22 days after sample receipt (OLM03.0, D-18/SVOA, 8.4.1). Sample results were not technically affected by this non-compliance.

- B. The data package contained the following contractual non-compliance as determined by the hard copy data review but not by CCS.

The data package was three days late.

II. TECHNICAL/USABILITY ASSESSMENT OF THE DATA PACKAGE

A total of 125 results were reviewed for this data package. The data package is technically acceptable although it contained two contractual non-compliances.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE ROAD  
HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 25159 SITE Wilcox Oil  
LABORATORY AATS NO. OF SAMPLES 1  
CONTRACT# 68-D5-0022 MATRIX Soil  
SDG# FFG24 REVIEWER (IF NOT ESD) ESAT  
SOW# RAS SOW OLM03.2 REVIEWER'S NAME Maria Missler  
ACCT# 7FAXJN28 SF# FAXUZZ COMPLETION DATE January 10, 1997

SAMPLE NO. FF-G24 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATA ASSESSMENT SUMMARY

	VOA	BNA	PEST
1. HOLDING TIMES	<u>O</u>	<u>O</u>	<u>O</u>
2. GC/MS TUNE/INSTR. PERFORM.	<u>O</u>	<u>O</u>	<u>O</u>
3. CALIBRATIONS	<u>O</u>	<u>O</u>	<u>O</u>
4. BLANKS	<u>O</u>	<u>O</u>	<u>O</u>
5. SMC/SURROGATES	<u>O</u>	<u>O</u>	<u>O</u>
6. MATRIX SPIKE/DUPLICATE	<u>O</u>	<u>O</u>	<u>O</u>
7. OTHER QC	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
8. INTERNAL STANDARDS	<u>O</u>	<u>O</u>	<u>N/A</u>
9. COMPOUND ID/QUANTITATION	<u>O</u>	<u>O</u>	<u>O</u>
10. PERFORMANCE/COMPLETENESS	<u>O</u>	<u>O</u>	<u>O</u>
11. OVERALL ASSESSMENT	<u>O</u>	<u>O</u>	<u>O</u>

O = Data had no problems.

M = Data qualified because of major or minor problems.

Z = Data unacceptable.

NA = Not applicable.

ACTION ITEMS: BNA samples FF-G24 and FF-G24MS were extracted 12 days past the contractual holding time limit.

AREA OF CONCERN: The data package arrived three days late.

COMMENTS/CLARIFICATIONS  
REGION 6 CLP QA REVIEW

CASE 25152 SDG FFG24 SITE Wilcox Oil LAB AATS

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

<u>No.</u>	<u>Acceptable</u>	<u>Provisional</u>	<u>Unacceptable</u>
VOA	<u>1</u>	<u>          </u>	<u>          </u>
BNA	<u>1</u>	<u>          </u>	<u>          </u>
PEST	<u>1</u>	<u>          </u>	<u>          </u>

COMMENTS: The case consisted of one soil sample for complete RAS organic analysis. The OTR/COC Record designated sample FF-G24 for MS/MSD analyses. The data package arrived 3 days late for the contractual 35-day turnaround time. BNA samples FF-G24 and FF-G24MS were extracted 12 days past the contractual holding time limit.

The laboratory analyzed the VOA/BNA soil samples following the low level methods. No TCL analytes were reported in the sample above the CRQL's. Results are acceptable for sample FF-G24.

The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Tables. An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

1. **Holding Times:** Acceptable. The sample met the contractual holding time requirements except as follows. No technical holding time criteria exist for soil samples.

BNA samples FF-G24 and FF-G24MS were extracted 22 days after collection and receipt. This holding time problem did not affect the spiked sample results as the spike compounds were added at the time of sample extraction. The reviewer did not qualify results for the native sample FF-G24 because the reported TCL analyte results were consistent with those in sample FF-G24MSD, which met the holding time criteria.

2. **Tuning/Performance:** Acceptable. The BFB and DFTPP analyses met GC/MS tuning criteria. The VOA and BNA sample analyses were within 12 hours of the respective BFB/DFTPP analyses. The Pest/PCB analyses met performance guidelines.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG24 SITE Wilcox Oil LAB AATS

3. Calibrations: Acceptable. Target compounds generally met contractual and technical criteria for all fractions.

Pest/PCB The reviewer was unable to verify the following calibration results on both analytical columns based on the raw data submitted:

all analyte and surrogate initial calibration factors; and

all nominal amounts in calibration verification analyses PEM and INDAM/INDEM.

The results reported by the laboratory differed consistently by a factor of two from the reviewer-calculated ones. The reviewer did not qualify results because the reported %RSD and %D values were not affected. However, the laboratory was contacted for clarification of this discrepancy.

4. Blanks: Acceptable. The method, storage, and instrument blanks met contractual requirements.

The BNA method blanks contained phthalates below the CRQL's. In the reviewer's opinion, all "B"-flagged laboratory results should be used as quantitation limits because the sample concentrations were less than 10X the associated blank concentrations.

The VOA storage blank and its associated method blank contained acetone below the CRQL. Sample results were not affected.

5. System Monitoring Compounds (SMC)/Surrogates: Acceptable.

VOA/BNA The VOA MS/MSD analyses had low recoveries for one SMC. Since the unspiked sample had acceptable recoveries, results were not qualified. Other SMC and surrogate recoveries met QC criteria.

Pest/PCB All reported surrogate recoveries were a factor of two lower than the reviewer-calculated ones. This problem is a consequence of the incorrect calibration factors reported for the initial calibrations (see section 3). Since surrogate recoveries were within QC limits based on the reviewer's calculations, no results were qualified.

6. Matrix Spike/Matrix Spike Duplicate: Acceptable. The MS/MSD analyses met recovery and precision requirements with one exception. Trichloroethene had a high MS recovery. Since the analyte was not detected in the unspiked sample, sample results were not affected.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG24 SITE Wilcox Oil LAB AATS

7. Other QC: Not Applicable.

8. Internal Standards: Acceptable. The internal standard (IS) responses and retention times were within the QC limits for all analyses.

9. Compound Identity/Quantitation: Acceptable. No TCL analytes were detected in the sample above the CRQL's. PAH's and phthalates were reported below the CRQL's. Reported analytes met compound identification criteria.

10. Performance/Completeness: Acceptable. The data package was complete with minor deficiencies. The laboratory was contacted for correction and resubmission (see attached FAX Record Log).

11. Overall Assessment: Data are acceptable for sample FF-G24.

## ORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the Data Summary Table.

- U Not detected at reported quantitation limit.
- N Identification is tentative.
- J Estimated value.
- R Unusable.
- ^ High biased. Actual concentration may be lower than the concentration reported.
- v Low biased. Actual concentration may be higher than the concentration reported.
- F+ A false positive exists.
- F- A false negative exists.
- B This result may be high biased because of laboratory/field contamination. The reported concentration is above 5X or 10X the concentration reported in the method/field blank.
- UJ Estimated quantitation limit.
- T Identification is questionable because of absence of other commonly coexisting pesticides.
- \* Result not recommended for use because of associated QA/QC performance inferior to that from other analysis.



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG24

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G24						
Chloromethane	11	U					
Bromomethane	11	U					
Vinyl chloride	11	U					
Chloroethane	11	U					
Methylene chloride	11	U					
Acetone	11	U					
Carbon disulfide	11	U					
1,1-Dichloroethene	11	U					
1,1-Dichloroethane	11	U					
1,2-Dichloroethene (total)	11	U					
Chloroform	11	U					
1,2-Dichloroethane	11	U					
2-Butanone	11	U					
1,1,1-Trichloroethane	11	U					
Carbon tetrachloride	11	U					
Bromodichloromethane	11	U					
1,2-Dichloropropane	11	U					
cis-1,3-Dichloropropene	11	U					
Trichloroethene	11	U					
Dibromochloromethane	11	U					
1,1,2-Trichloroethane	11	U					
Benzene	11	U					
trans-1,3-Dichloropropene	11	U					
Bromoform	11	U					
4-Methyl-2-pentanone	11	U					
2-Hexanone	11	U					
Tetrachloroethene	11	U					
1,1,2,2-Tetrachloroethane	11	U					
Toluene	11	U					
Chlorobenzene	11	U					
Ethylbenzene	11	U					
Styrene	11	U					
Xylenes (total)	11	U					
Sample wt (g):	5						
%Moisture:	10						
Dilution Factor:	1						
Level:	LCW						
Number of TIC's:	0						

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PFG24

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	SEP-10 PF-G24						
Phenol	370 U						
bis(2-Chloroethyl) ether	370 U						
2-Chlorophenol	370 U						
1,3-Dichlorobenzene	370 U						
1,4-Dichlorobenzene	370 U						
1,2-Dichlorobenzene	370 U						
2-Methylphenol	370 U						
2,2'-Oxybis(1-chloropropane)	370 U						
4-Methylphenol	370 U						
N-Nitroso-di-n-propylamine	370 U						
Hexachloroethane	370 U						
Nitrobenzene	370 U						
Isophorone	370 U						
2-Nitrophenol	370 U						
2,4-Dimethylphenol	370 U						
bis(2-Chloroethoxy)methane	370 U						
2,4-Dichlorophenol	370 U						
1,2,4-Trichlorobenzene	370 U						
Naphthalene	370 U						
4-Chloroaniline	370 U						
Hexachlorobutadiene	370 U						
4-Chloro-3-methylphenol	370 U						
2-Methylnaphthalene	370 U						
Hexachlorocyclopentadiene	370 U						
2,4,6-Trichlorophenol	370 U						
2,4,5-Trichlorophenol	920 U						
2-Chloronaphthalene	370 U						
2-Nitroaniline	920 U						
Dimethylphthalate	370 U						
Acenaphthylene	370 U						
2,6-Dinitrotoluene	370 U						
3-Nitroaniline	920 U						
Acenaphthene	370 U						
2,4-Dinitrophenol	920 U						
4-Nitrophenol	920 U						
Dibenzofuran	370 U						
2,4-Dinitrotoluene	370 U						
Diethylphthalate	370 U						
4-Chlorophenyl-phenylether	370 U						
Fluorene	370 U						
4-Nitroaniline	920 U						
4,6-Dinitro-2-methylphenol	920 U						
N-Nitrosodiphenylamine	370 U						
4-Bromophenyl-phenylether	370 U						
Hexachlorobenzene	370 U						
Pentachlorophenol	920 U						
Phenanthrene	22 U						
Anthracene	370 U						

## ORGANIC DATA SUMMARY

Case No.: 25153

SDG: FFG24

Reviewer: M. Missier

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G24						
Carbazole	370 U						
Di-n-butylphthalate	370 U						
Fluoranthene	22 J						
Pyrene	58 J						
Butylbenzylphthalate	370 U						
3,3'-Dichlorobenzidine	370 U						
Benzo(a)anthracene	27 J						
Chrysene	54 J						
bis(2-Ethylhexyl)phthalate	370 U						
Di-n-octylphthalate	370 U						
Benzo(b)fluoranthene	30 J						
Benzo(k)fluoranthene	370 U						
Benzo(a)pyrene	20 J						
Indeno(1,2,3-cd)pyrene	370 U						
Dibenz(a,h)anthracene	370 U						
Benzo(g,h,i)perylene	370 U						
Sample wt (g):	30						
%Moisture:	10						
Dilution Factor:	1						
Level:	LCW						
Number of TIC's:	13						

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PFG24

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G24						
alpha-BHC	1.9 U						
beta-BHC	1.9 U						
delta-BHC	1.9 U						
gamma-BHC (lindane)	1.9 U						
Heptachlor	1.9 U						
Aldrin	1.9 U						
Heptachlor epoxide	1.9 U						
Endosulfan I	1.9 U						
Dieldrin	3.7 U						
4,4'-DDE	3.7 U						
Endrin	3.7 U						
Endosulfan II	3.7 U						
4,4'-DDD	3.7 U						
Endosulfan sulfate	3.7 U						
4,4'-DDT	3.7 U						
Methoxychlor	19 U						
Endrin ketone	3.7 U						
Endrin aldehyde	3.7 U						
alpha-Chlordane	1.9 U						
gamma-Chlordane	1.9 U						
Toxaphene	190 U						
Aroclor-1016	37 U						
Aroclor-1221	74 U						
Aroclor-1232	37 U						
Aroclor-1242	37 U						
Aroclor-1248	37 U						
Aroclor-1254	37 U						
Aroclor-1260	37 U						
Sample wt (g):	30						
%Moisture:	10						
Dilution Factor:	1						

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

# INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 25159 SDG No. FFG24 SDG Nos. To Follow \_\_\_\_\_ SAS No. \_\_\_\_\_ Date Rec 12/27/96

EPA Lab ID: <u>AATS</u> Lab Location: <u>Broken Arrow, OK 74012</u> Region: <u>6</u> Audit No.: <u>25159/FFG24</u> Re_Submitted CSF? Yes _____ No <u>X</u> Box No(s): <u>1</u> COMMENTS: <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">           13 No airbills were available as the samples were delivered in person.         </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">ORIGINALS</th> <th style="width: 10%;">YES</th> <th style="width: 10%;">NO</th> <th style="width: 10%;">N/A</th> </tr> </thead> <tbody> <tr> <td colspan="4"><b>CUSTODY SEALS</b></td> </tr> <tr> <td>1. Present on package?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>2. Intact upon receipt?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>FORM DC-2</b></td> </tr> <tr> <td>3. Numbering scheme accurate?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>4. Are enclosed documents listed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>5. Are listed documents enclosed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>FORM DC-1</b></td> </tr> <tr> <td>6. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>7. Complete?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>8. Accurate?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>CHAIN-OF-CUSTODY RECORD(s)</b></td> </tr> <tr> <td>9. Signed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>10. Dated?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>TRAFFIC REPORT(s) PACKING LIST(s)</b></td> </tr> <tr> <td>11. Signed?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>12. Dated?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>AIRBILLS/AIRBILL STICKER</b></td> </tr> <tr> <td>13. Present?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td>14. Signed?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td>15. Dated?</td> <td></td> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td colspan="4"><b>SAMPLE TAGS</b></td> </tr> <tr> <td>16. Does DC-1 list tags as being included?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>17. Present?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>OTHER DOCUMENTS</b></td> </tr> <tr> <td>18. Complete?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>19. Legible?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>20. Original?</td> <td></td> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td>20a. If "NO", does the copy indicate where original documents are located?</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> </tbody> </table>	ORIGINALS	YES	NO	N/A	<b>CUSTODY SEALS</b>				1. Present on package?	X			2. Intact upon receipt?	X			<b>FORM DC-2</b>				3. Numbering scheme accurate?	X			4. Are enclosed documents listed?	X			5. Are listed documents enclosed?	X			<b>FORM DC-1</b>				6. Present?	X			7. Complete?	X			8. Accurate?	X			<b>CHAIN-OF-CUSTODY RECORD(s)</b>				9. Signed?	X			10. Dated?	X			<b>TRAFFIC REPORT(s) PACKING LIST(s)</b>				11. Signed?	X			12. Dated?	X			<b>AIRBILLS/AIRBILL STICKER</b>				13. Present?			X	14. Signed?			X	15. Dated?			X	<b>SAMPLE TAGS</b>				16. Does DC-1 list tags as being included?	X			17. Present?	X			<b>OTHER DOCUMENTS</b>				18. Complete?	X			19. Legible?	X			20. Original?		X		20a. If "NO", does the copy indicate where original documents are located?	X		
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Over for additional comments.

Audited by: <u>L. Klein Kessler</u>	Maria Missler / ESAT Data Reviewer	Date <u>1/8/97</u>
Audited by: _____	_____	Date _____
Audited by: _____	_____	Date _____
Signature	Printed Name/Title	

TO BE COMPLETED BY CEAT		
Date Recvd by CEAT: _____	Date Entered: _____	Date Reviewed: _____
Entered by: _____	_____	_____
Reviewed by: _____	_____	_____
Signature	Printed Name/Title	



In Reference to Case No(s):  
25159 SDG: FFG24 (O-1737)

Contract Laboratory Program  
REGIONAL/LABORATORY COMMUNICATION SYSTEM  
FAX Record Log

Date of FAX: January 10, 1997  
Laboratory Name: AATS  
Lab Contact: Harry Borg

Region: 6  
Regional Contact: Maria Missler - ESAT

FAX initiated by: Laboratory X Region

In reference to data for the following fractions:

VCA Pest/PCB

Summary of Questions/Issues:

A. VOA

1. Method Blank VBLK3: A spectrum was submitted for the TIC at 12.190 minutes (page 145) but the TIC was not listed on Form I VOA-TIC (page 138). Please revise the Form I VCA-TIC to include this TIC and resubmit.

B. Pest/PCB

1. Forms VI PEST-2, pages 397 and 398: The reviewer was unable to reproduce the calibration factors reported for all TCL analytes and surrogates based on the raw data (pages 431-444). Please correct and resubmit these forms to match the raw data or demonstrate your calculations.
2. Forms VII PEST-1 and Forms VII PEST-2, pages 406-411: The reviewer was unable to reproduce the nominal amount on these forms based on a 0.5  $\mu$ L injection. According to your case narrative (pages 4-7) the nominal amount on these forms should be half of what is reported. Please correct these forms to match your raw data and to match the corrected calibration factors in question 1 above.

FAX COMMUNICATION LOG

Continuation Page 2  
Laboratory/Contact AATS / Harry Borg  
In Reference To Case No. 25159 SDG: FFG24

NOTE: Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM03.0, p. B-29), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 7 days to:

Mr. Mahmoud El-Feky  
U.S. EPA Region 6 Laboratory  
10625 Fallstone Road  
Houston, TX 77099

If you have any questions, please contact me at (713) 988-2995.

Maria Messler  
Signature

January 10, 1997  
Date

Distribution: (1) Lab Copy (2) Region Copy



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

23 January 1997

Mahmoud El-Feky  
USEPA Region VI  
10625 Fallstone Road  
Houston, TX 77099

**RE: ESAT review of Complete SDG File (CSF)**  
**CLP Case #25159 - SDG#MFGZ66**

Dear Mr. El-Feky:

Please find enclosed ARI's response to the comments generated during the above referenced CSF review. The following is a question by question response:

**Question/Issue #1** - The person who compiled the documents forgot to put the sample tag in a plastic bag. This contract deviation has been noted for future Region 6 cases.

**Question/Issue #2** - Corrected Form 14 is enclosed.

**Question/Issue #3** - Corrected Form 14 is enclosed.

**Question/Issue #4** - Corrected Form 14 and corrected raw data are enclosed.

If you have any additional questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Jeff J. Reitan  
Project Manager  
jeff@arilabs.com

enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
EPA HOUSTON LABORATORY  
10625 FALLSTONE ROAD  
HOUSTON, TX 77099

RESUBMITTED DATA REVIEW REPORT

DATE: January 29, 1997 CASE #: 25159  
TO: L. Biasco, 6SF-RA SDG #: MFGZ66  
USEPA Region 6 Site Name: WILCOX OIL  
Lab Name: ARI  
From: Mervin Doucet TDF #: 6-7129A  
ESAT

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Response to Region Request (Received 1/24/97):

The resubmitted information does not affect the original data review. The laboratory resubmitted all requested explanations, forms, and raw data. Please place the resubmitted material in the data package.

Response to CCS Request (Received 1/24/97):

The resubmitted information does not affect the original data review. The laboratory submitted explanations and resubmitted data requested by CCS. Pages 53 through 84 can be discarded because they were already submitted in the Region's resubmission. Please place the remaining resubmitted material in the data package.

I2077

Lockheed Martin Services Group  
ESAT Region 6

One Sterling Plaza, 10101 Southwest Freeway, Suite 500  
Houston, TX 77074 TEL: (713) 988-2959

FACSIMILE COVER SHEET

Please deliver the following pages to:

Name Paul Jay Kuhn

Firm ARI

City Seattle State WA

Telephone 206-621-6490 Ext. \_\_\_\_\_

Fax Telephone No. 206-621-7523 Ext. \_\_\_\_\_

Sender:

Name Mervin Doucet ESAT

Date January 17, 1997 Time \_\_\_\_\_

Total Number of pages including this Cover Sheet 2

If you do not receive all the pages or if any pages are unclear,  
please call: (713) 988-2959

MESSAGES: \_\_\_\_\_  
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Fax No. (713) 988-2994



Case 25159 SDG MFGZ66  
Page 1 of 1  
ESAT FILE NO.: I2077

Contract Laboratory Program  
REGIONAL/LABORATORY COMMUNICATION SYSTEM  
FAX Record Log

Date of FAX: January 17, 1997  
Laboratory Name: ARI  
Lab Contact: Paul Jay Kuhn  
Region: 6  
Regional Contact: Mervin Doucet (ESAT)  
FAX Initiated by: Region

In reference to data for the following sample number:

MFG-Z66

Summary of Questions/Issues:

1. The sample tag was not sealed in a plastic bag (SOW ILM04.0, page B-13, F.3.d). Please submit an acknowledgement of this contractual deviation and note for future reference.
2. According to the raw data (page 271), the selenium analysis time on the Form 14 (page 53) for sample MFG-Z66 should be 15:33. Please resubmit the corrected Form 14.
3. According to the raw data (page 286), the mercury analysis times for most standards do not match the analysis times on the Form 14 (page 55). Please make the necessary corrections and resubmit.
4. According to the raw data (pages 80-84), the ICP analysis times for all standards do not match the analysis times on the Form 14 (page 53). Please make the necessary corrections and resubmit.

EPA expects the laboratory to look into items and submit data within seven days to Mahmoud El-Feky, U.S. EPA, 10625 Fallstone Road, Houston TX 77099.

Mervin Doucet  
Signature

1/17/97  
Date

Distribution: (1) Lab Copy (2) Region Copy



## U.S. EPA - CLP

14  
ANALYSIS RUN LOG

Lab Name: ANALYTICAL\_RESOURCES\_INC.

Contract: 68D50134\_\_

Lab Code: ARI\_\_ Case No.: 25159\_\_

SAS No.: \_\_\_\_\_ SDG No.: MFGZ66

Instrument ID Number: BUCK MERCURY\_\_

Method: CV

Start Date: 12/04/96

End Date: 12/04/96

EPA Sample No.	D/F	Time	% R	Analytes																											
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	N A	T L	V	Z N	C N				
S0	1.00	1338		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
S0.2	1.00	1340		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
S0.5	1.00	1342		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
S1	1.00	1343		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
S5	1.00	1346		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
S10	1.00	1347		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
ICV	1.00	1351		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
ICB	1.00	1353		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
CCV	1.00	1354		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
CCB	1.00	1356		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
CRA	1.00	1358		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1400		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	5.00	1402		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1405		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1406		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1408		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1421		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1423		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1425		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1427		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CCV	1.00	1429		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
CCB	1.00	1431		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
CCV	1.00	1442		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
CCB	1.00	1444		-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1447		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1449		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1451		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1453		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1455		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1457		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1459		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZZZZZZ	1.00	1501		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

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CH

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BA 01/17/97

Standardization Rpt.

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page 1

Method: ICPCLP1

Standard: STD1-Blank

Elem	AG	AL	AS	B	BA	BE	CA
Avg	-.0390	.4552	.0676	.0229	.0019	.0929	.0371
SDev	.0041	.0266	.0216	.0029	.0008	.0014	.0029
%RSD	10.56	5.832	31.99	12.50	43.30	1.538	7.692

#1	-.0343	.4429	.0429	.0257	.0029	.0914	.0400
#2	-.0414	.4857	.0771	.0200	.0014	.0943	.0371
#3	-.0414	.4371	.0829	.0229	.0014	.0929	.0343

Elem	CD	CO	CR	CU	FE	K	MG
Avg	.0205	.0067	.0071	.0486	.0195	-.1552	.0048
SDev	.0030	.0030	.0014	.0029	.0109	.0246	.0060
%RSD	14.52	44.61	20.00	5.882	55.89	15.84	124.9

#1	.0229	.0057	.0071	.0486	.0171	-.1271	.0029
#2	.0214	.0100	.0057	.0514	.0314	-.1657	.0114
#3	.0171	.0043	.0086	.0457	.0100	-.1729	.0000

Elem	MN	MO	NA	NI	PB	SB	SE
Avg	.0019	.0029	.5867	-.0686	.0129	.0548	.0238
SDev	.0008	.0029	.0208	.0029	.0124	.0064	.0060
%RSD	43.30	100.0	3.548	4.167	96.86	11.76	24.98

#1	.0014	.0000	.6100	-.0714	.0071	.0543	.0171
#2	.0029	.0029	.5700	-.0657	.0043	.0614	.0257
#3	.0014	.0057	.5800	-.0686	.0271	.0486	.0286

Elem	SI	SN	SR	TI	TL	V	ZN
Avg	.1529	-.0033	.0629	.0129	-.0886	-.0248	.0119
SDev	.0043	.0064	.0000	.0000	.0311	.0064	.0008
%RSD	2.804	193.3	.0000	.0000	35.15	26.01	6.928

#1	.1571	-.0029	.0629	.0129	-.1029	-.0243	.0114
#2	.1529	.0029	.0629	.0129	-.0529	-.0186	.0114
#3	.1486	-.0100	.0629	.0129	-.1100	-.0314	.0129

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## Standardization Rpt.

S

Sun 12-15-96 01:28:45 PM

page 1

1323

BA 01/17/97

Method: ICPCLP1

Standard: STD2

Elem	BA	CA	CD	CO	CR	CU	MN
Avge	52.48	23.67	55.15	25.29	16.91	61.41	30.10
SDev	.16	.07	.13	.10	.05	.22	.08
%RSD	.3103	.2942	.2424	.3785	.2854	.3653	.2747

#1	52.66	23.74	55.28	25.39	16.95	61.64	30.17
#2	52.44	23.68	55.16	25.29	16.92	61.41	30.13
#3	52.35	23.60	55.01	25.19	16.86	61.19	30.01

Elem	V
Avge	63.46
SDev	.32
%RSD	.5100

#1	63.76
#2	63.50
#3	63.12

000081

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1328  
01/17/97

Standardization Rpt.

S

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page :

Method: ICPCLP1

Standard: STD5

Elem	K
Avge	12.77
SDev	.05
%RSD	.4121

#1	12.83
#2	12.74
#3	12.73

000082 01/17/97



12/01/97

Standardization Rpt.

S

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1333

page :

Method: ICPCLP1

Standard: STD4

Elem	MO	SB	SI	SN	TI
Avge	21.28	18.06	28.68	10.81	55.77
SDev	.03	.11	.18	.03	.37
%RSD	.1622	.5859	.6345	.3107	.6551
#1	21.32	18.16	28.88	10.85	56.19
#2	21.25	18.06	28.61	10.80	55.61
#3	21.28	17.95	28.54	10.79	55.51

000083 12/01/97

## Standardization Rpt.

5

Sun 12-15-96 01:42:43 PM

page :

fht 01/17/97

1337

Method: ICPCLP1

Standard: STD3

Elem	AG	AL	AS	B	BE	FE	MG
Avge	3.336	29.52	10.50	24.35	166.4	24.87	7.388
SDev	.011	.11	.07	.14	.6	.08	.028
%RSD	.3233	.3712	.6696	.5843	.3784	.3290	.3781

#1	3.324	29.39	10.43	24.19	165.7	24.78	7.380
#2	3.346	29.59	10.57	24.40	166.8	24.90	7.419
#3	3.337	29.57	10.51	24.46	166.7	24.94	7.364

Elem	NA	NI	PE	SE	SR	TL	ZN
Avge	44.83	52.41	13.43	7.482	48.70	10.86	9.844
SDev	.16	.27	.04	.027	.20	.06	.014
%RSD	.3617	.5209	.3057	.3629	.4043	.5095	.1454

#1	44.65	52.11	13.40	7.454	48.47	10.80	9.830
#2	44.97	52.64	13.41	7.509	48.82	10.91	9.843
#3	44.86	52.49	13.47	7.483	48.80	10.87	9.859

000084 fht 01/17/97



## LABORATORY RESPONSE TO RESULTS OF CCS

CRITERION	COMMENTS
AA17.2	Raw data average is incorrect. This is a rounding problem with our CLP reporting software, which the supplier, to date has been unwilling to fix.
AA36	Replicate injections not performed. Yes they were they just are not in the <del>raw</del> EDD. Our software supplier & instrument manufacture are working on this problem.
AB05.2	EDD problem - raw data and forms correct.
AC03.2	EDD error - raw data and forms correct.
AF01.1	EDD error - raw data and forms are correct.
AF01.3	EDD error - raw data and forms are correct.
AF03.2	EDD error - raw data and forms are correct.
AG04.2	Spile added is incorrect: Yes for CN the sample was spiked at 150 <del>ug/L</del> not 100 <del>ug/L</del> . This is an error and is not contract compliant.
AG05.2	EDD error
AH04	EDD error
AJ04.1	EDD error
AI06.1	EDD error
AJ05.2	EDD error
AK06.2	EDD error
AL06	EDD error







## U.S. EPA - CLP

14  
ANALYSIS RUN LOG

Lab Name: ANALYTICAL\_RESOURCES\_INC.

Contract: 68D50134\_\_

Lab Code: ARI\_\_ Case No.: 25159\_\_

SAS No.: \_\_\_\_\_ SDG No.: MFGZ66

Instrument ID Number: BUCK MERCURY\_\_

Method: CV

Start Date: 12/04/96

End Date: 12/04/96

EPA Sample No.	D/F	Time	% R	Analytes																							
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	X	S E	A G	N A	T L	V	Z N	C
S0	1.00	1338																X									
S0.2	1.00	1340																X									
S0.5	1.00	1342																X									
S1	1.00	1343																X									
S5	1.00	1346																X									
S10	1.00	1347																X									
ICV	1.00	1351																X									
ICB	1.00	1353																X									
CCV	1.00	1354																X									
CCB	1.00	1356																X									
CRA	1.00	1358																X									
ZZZZZZ	1.00	1400																									
ZZZZZZ	5.00	1402																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1408																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1423																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1427																									
CCV	1.00	1429																X									
CCB	1.00	1431																X									
CCV	1.00	1442																X									
CCB	1.00	1444																X									
ZZZZZZ	1.00	1447																									
ZZZZZZ	1.00	1449																									
ZZZZZZ	1.00	1451																									
ZZZZZZ	1.00	1453																									
ZZZZZZ	1.00	1455																									
ZZZZZZ	1.00	1457																									
ZZZZZZ	1.00	1459																									
ZZZZZZ	1.00	1501																									

FORM XIV - IN

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1514 14 61

BA 01/17/97

Standardization Rpt.

50

Sun 12-15-96 1320 01-22:53 PM

page

Method: ICPCLP1 Standard: STD1-Blank

Elem	AG	AL	AS	B	BA	BE	CA
Avge	.0390	.4552	.0676	.0229	.0019	.0929	.0371
SDev	.0041	.0266	.0216	.0029	.0008	.0014	.0029
%RSD	10.56	5.832	31.99	12.50	43.30	1.538	7.692

#1	.0343	.4429	.0429	.0257	.0029	.0914	.0400
#2	.0414	.4857	.0771	.0200	.0014	.0943	.0371
#3	.0414	.4371	.0829	.0229	.0014	.0929	.0343

Elem	CD	CO	CR	CU	FE	K	MG
Avge	.0205	.0067	.0071	.0486	.0195	.1552	.0048
SDev	.0030	.0030	.0014	.0029	.0109	.0246	.0060
%RSD	14.52	44.61	20.00	5.882	55.89	15.84	124.9

#1	.0229	.0057	.0071	.0486	.0171	.1271	.0029
#2	.0214	.0100	.0057	.0514	.0314	.1657	.0114
#3	.0171	.0043	.0086	.0457	.0100	.1729	.0000

Elem	MN	MO	NA	NI	PB	SB	SE
Avge	.0019	.0029	.5867	.0686	.0129	.0548	.0238
SDev	.0008	.0029	.0208	.0029	.0124	.0064	.0060
%RSD	43.30	100.0	3.548	4.167	96.86	11.76	24.98

#1	.0014	.0000	.6100	.0714	.0071	.0543	.0171
#2	.0029	.0029	.5700	.0657	.0043	.0614	.0257
#3	.0014	.0057	.5800	.0686	.0271	.0486	.0286

Elem	SI	SN	SR	TI	TL	V	ZN
Avge	.1529	.0033	.0629	.0129	.0886	.0248	.0119
SDev	.0043	.0064	.0000	.0000	.0311	.0064	.0008
%RSD	2.804	193.3	.0000	.0000	35.15	26.01	6.928

#1	.1571	.0029	.0629	.0129	.1029	.0243	.0114
#2	.1529	.0029	.0629	.0129	.0529	.0186	.0114
#3	.1486	.0100	.0629	.0129	.1100	.0314	.0129

000000 BA 01/17/97

1323  
12/17/97

Standardization Rpt. S Sun 12-15-96 01:28:45 PM page

Method: ICPCLP1 Standard: STD2

Elem	BA	CA	CD	CD	CR	CU	MN
Avge	52.48	23.67	55.15	25.29	16.91	61.41	30.10
SDev	.16	.07	.13	.10	.05	.22	.08
%RSD	.3103	.2942	.2424	.3785	.2854	.3653	.2747

#1	52.66	23.74	55.28	25.39	16.95	61.64	30.17
#2	52.44	23.68	55.16	25.29	16.92	61.41	30.13
#3	52.35	23.60	55.01	25.19	16.86	61.19	30.01

Elem	V
Avge	63.46
SDev	.32
%RSD	.5100

#1	63.76
#2	63.50
#3	63.12

000081  
12/17/97

Pat 01/17/97

1328

Standardization Rpt.

S

Sun 12-15-96 04:33:03 PM

page

Method: ICPCLP1

Standard: STD5

Elem	K
Avge	12.77
SDev	.05
%RSD	.4121

#1	12.83
#2	12.74
#3	12.73

000082

Pat 01/17/97

1/8/01/17/97

Standardization Rpt.

S

Sun 12-15-96 01:37:42 PM

1333

page

Method: ICPCLP1

Standard: STD4

Elem	MO	SB	SI	SN	TI
Avge	21.28	18.06	28.68	10.81	55.77
SDev	.03	.11	.18	.03	.37
%RSD	.1622	.5859	.6345	.3107	.6551
#1	21.32	18.16	28.88	10.85	56.19
#2	21.25	18.06	28.61	10.80	55.61
#3	21.28	17.95	28.54	10.79	55.51

000083

1/8/01/17/97

## Standardization Rpt.

Sun 12-15-96 01:42:43 PM

page

Method: ICPCLP1

Standard: STD3

Elem	AG	AL	AS	B	BE	FE	MG
Avge	3.336	29.52	10.50	24.35	166.4	24.87	7.388
SDev	.011	.11	.07	.14	.6	.08	.028
%RSD	.3233	.3712	.6696	.5843	.3784	.3290	.3781

#1	3.324	29.39	10.43	24.19	165.7	24.78	7.380
#2	3.346	29.59	10.57	24.40	166.8	24.90	7.419
#3	3.337	29.57	10.51	24.46	166.7	24.94	7.364

Elem	NA	NI	PB	SE	SR	TL	ZN
Avge	44.83	52.41	13.43	7.482	48.70	10.86	9.844
SDev	.16	.27	.04	.027	.20	.06	.014
%RSD	.3617	.5209	.3057	.3629	.4043	.5095	.1454

#1	44.65	52.11	13.40	7.454	48.47	10.80	9.830
#2	44.97	52.64	13.41	7.509	48.82	10.91	9.843
#3	44.86	52.49	13.47	7.483	48.80	10.87	9.859

000084  
01/17/97



SAMPLE	CONC	%RSD	MEAN ABS	READINGS	
QCBLANK QC <i>CCB3</i>	0.2	34.8	0.001	0.001 17Sep96 ABS =	0.000 14:24 0.003
BLANK QC <i>50</i>	0.0		0.004	0.004 17Sep96	0.004 14:31
RESLOPE 3 QC <i>520</i>	20.0	2.4	0.053	0.054 17Sep96	0.052 14:36
QCSTANDARD QC <i>CCU4</i>	38.6	0.5	0.102	0.101 17Sep96 ZR =	0.102 14:41 96.6
QCBLANK QC <i>CCB4</i>	0.1	22.2	0.000	0.000 17Sep96 ABS =	0.000 14:47 0.004
5374 A 5 QC	<del>12.6</del>	<del>54.2</del>	<del>0.030</del>	0.030 17Sep96	0.040 14:52
QC SPIKE QC	<del>22.0</del>	<del>10.8</del>	<del>0.055</del>	0.054 17Sep96 ZR =	0.063 14:58 47.4
ZR FAILED. REPEAT BY STANDARD ADDITIONS					
5374 ADUP 5 QC <i>MF6266D</i>	25.2	0.8	0.067	0.067 17Sep96	0.066 15:03
QC SPIKE QC <i>MF6266DA</i>	41.4	2.1	0.109	0.107 17Sep96 ZR =	0.111 15:09 80.8
ZR FAILED. REPEAT BY STANDARD ADDITIONS					
<i>CCU5</i> <del>5375 ME 1</del> QC	39.1	1.4	0.103	0.102 17Sep96	0.104 15:14
<i>CCB5</i> <del>QC SPIKE</del> QC	0.4	19.7	0.001	0.001 17Sep96 ZR =	0.001 15:20 193.5
ZR LESS THAN MINIMUM LIMIT					
BLANK QC <i>50</i>	0.0		-0.001	-0.001 17Sep96	-0.002 15:27
QCSTANDARD QC <i>520</i> <i>CCU4</i>	37.5	1.7	0.099	0.100 17Sep96 ZR =	0.098 15:33 93.7
QCBLANK QC <i>CCB6</i>	0.2	32.3	0.001	0.001 17Sep96 ABS =	0.000 15:38 0.004
5374 ADUP 10 QC	<del>14.5</del>	<del>19.2</del>	<del>0.030</del>	0.036 17Sep96	0.044 15:43
QC SPIKE QC	<del>23.0</del>	<del>10.5</del>	<del>0.063</del>	0.058 17Sep96 ZR =	0.066 15:49 46.4
ZR FAILED. REPEAT BY STANDARD ADDITIONS					

CONC. = 13.7 ppb

r = 0.9978

CONC. = 15.7 ppb

r = 0.9951

3/20/17/97

2.55

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE ROAD  
HOUSTON, TEXAS 77099

RESUBMITTED DATA REVIEW REPORT

DATE :	<u>January 24, 1997</u>	CASE #:	<u>25159</u>
TO :	<u>L. Biasco</u>	SAS # :	<u></u>
	<u>(6SF-RA)</u>	SDG # :	<u>FFG24</u>
FROM :	<u>Maria Missler</u>	LAB :	<u>AATS</u>
	<u>(LMSG)</u>	SITE :	<u>Wilcox Oil</u>
	<u>ESAT - Region 6</u>	TDF # :	<u></u>
	<u></u>	ESAT #:	<u>O-1787</u>

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Laboratory response to Region 6 FAX request: (received 1/17/97)

A. VOA

1. Method blank VBLK3: The laboratory revised and resubmitted Form I VOA-TIC. Please replace page 138 with the resubmitted one.

B. Pest/PCB

1. The laboratory corrected and resubmitted Forms VI PEST-2. Please replace pages 397 and 398 with the resubmitted ones.
2. The laboratory corrected and resubmitted Forms VII PEST-1 and PEST-2. Please replace pages 406-411 with the resubmitted ones.

Please ignore resubmitted pages 470, 471, 474, and 475 as the reviewer did not request them.

16 January, 1997

To:

Mr. Mahmoud El-Feky  
U.S. EPA Region 6 Laboratory  
10625 Fallstone Road  
Houston, TX 77099

MM

From:

Laboratory Name: SWOK  
Lab Contact: Harry Borg

Region: 6  
Regional Contact: Maria Missler

In Reference to CASE No. 25159 SDG: FFG24

The Unknown compound has been added to TIC Form 1, pg. 138.

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK3

b Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG24

Matrix: (soil/water) WATER

Lab Sample ID: L961126A

Sample wt/vol: 5.0

(g/mL) ML

Lab File ID: L23525.D

Level: (low/med) LOW

Date Received: / /

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 11/26/96

GC Column: DB-624

ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: \_\_\_\_\_ (uL)

Soil Aliquot Volume: \_\_\_\_\_ (uL)

Number TICs found: 81 <sup>4</sup> 1-16-97

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	12.190	10	J
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

FORM I VOA-TIC

OLM03

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# RESPONSE TO REGION REQUEST

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**DATE:** January 14, 1997  
**TO:** Maria Missler -- ESAT/Lockheed  
**FROM:** Vicki L. Hall -- Southwest Laboratory of Oklahoma, Inc.  
**RE:** Case 25159, SDG: FFG24

Pest/PCB:

RESPONSE 1:

The form VI PEST-2 have been corrected and resubmitted.

RESPONSE 2:

The forms VII PEST-1 and VII PEST-2 have been corrected and resubmitted.

All appropriate amendments are enclosed. If you have any further questions, please call me at (918) 251-2858.

## PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG24

Instrument ID: HP\_16A

Level (x low): low 1.0 mid 4.0 high 16.0

GC Column: DB-1701

ID: 0.32(mm)

Date(s) Analyzed: 12/02/96 12/02/96

COMPOUND	CALIBRATION FACTORS			MEAN	%RSD
	LOW	MID	HIGH		
alpha-BHC	17804400	18590700	20200050	18865050	6.5
beta-BHC	12695600	11328500	10528175	11517425	9.5
delta-BHC	16002800	16857100	18878425	17246108	8.6
gamma-BHC (Lindane)	17711200	17913600	18086275	17903692	1.0
Heptachlor	18478400	16293600	14236575	16336192	13.0
Aldrin	18326800	18787900	20929800	19348167	7.2
Heptachlor epoxide	18826800	18201800	19107425	18712008	2.5
Endosulfan I	17089600	16887200	16983600	16986800	0.6
Dieldrin	15963400	16918250	17492675	16791442	4.6
4,4'-DDE	16293000	17954050	19385325	17877458	8.7
Endrin	12516200	13143400	13201463	12953688	2.9
Endosulfan II	15326600	15323450	16305413	15651821	3.6
4,4'-DDD	12116800	13139200	12914463	12723488	4.2
Endosulfan sulfate	14367600	14530700	14704700	14534333	1.2
4,4'-DDT	10372400	10540600	9598113	10170371	4.9
Methoxychlor	5502080	4842570	4288588	4877746	12.5
Endrin ketone	15022200	15877800	16060425	15653475	3.5
Endrin aldehyde	12106200	13400850	13642588	13049879	6.3
alpha-Chlordane	18630000	17910700	18195325	18245342	2.0
gamma-Chlordane	19303600	18449900	19042825	18932108	2.3
Tetrachloro-m-xylene	20031200	19294700	18550025	19291975	3.8
Decachlorobiphenyl	21137800	18865800	16254263	18752621	13.0

\* Surrogate calibration factors are measured from Standard Mix A analyses.



## PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG24

Instrument ID: HP\_16B

Level (x low): low 1.0 mid 4.0 high 16.0

GC Column: DB-17

ID: 0.32(mm)

Date(s) Analyzed: 12/02/96 12/02/96

COMPOUND	CALIBRATION FACTORS			MEAN	%RSD
	LOW	MID	HIGH		
alpha-BHC	13567600	14215800	15820825	14534742	8.0
beta-BHC	8778400	8370200	8003200	8383933	4.6
delta-BHC	12332400	12466900	13862850	12887383	6.6
gamma-BHC (Lindane)	13163200	13143300	13506650	13271050	1.5
Heptachlor	13458800	11766700	10242425	11822642	13.6
Aldrin	14136000	14854100	17340175	15443425	10.9
Heptachlor epoxide	14519600	13832500	14759775	14370625	3.3
Endosulfan I	12994000	12876100	13352775	13074292	1.9
Dieldrin	11782800	12169400	12651888	12201363	3.6
4,4'-DDE	11944600	13416200	15611763	13657521	13.5
Endrin	8451800	8538650	8580088	8523513	0.8
Endosulfan II	12171000	12113000	12819275	12367758	3.2
4,4'-DDD	8691800	8876800	8866075	8811558	1.2
Endosulfan sulfate	11163800	11273500	11830525	11422608	3.1
4,4'-DDT	8179200	7966950	7578275	7908142	3.9
Methoxychlor	4613560	4115780	3474218	4067853	14.0
Endrin ketone	12554200	12838100	12953225	12781842	1.6
Endrin aldehyde	11459800	10697500	10358075	10838458	5.2
alpha-Chlordane	15329600	14507900	15240800	15026100	3.0
gamma-Chlordane	15680800	14862000	15809850	15450883	3.3
Tetrachloro-m-xylene	15190000	14979800	14698625	14956142	1.6
Decachlorobiphenyl	18757400	16637800	14544713	16646638	12.7

\* Surrogate calibration factors are measured from Standard Mix A analyses.

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7E  
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022  
 Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24  
 GC Column: DB-1701 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96  
 EPA Sample No.(PIBLK): PIBLK16Q Date Analyzed : 12/02/96  
 Lab Sample ID (PIBLK): 5-266-1616Q Time Analyzed : 1546  
 EPA Sample No.(INDA): INDAM16M Date Analyzed : 12/02/96  
 Lab Sample ID (INDA): 5-261-1616M Time Analyzed : 1616

INDIVIDUAL MIX A COMPOUND	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC	9.27	9.23	9.33	0.011	0.010	5.0
gamma-BHC (Lindane)	10.08	10.03	10.13	0.011	0.010	5.7
Heptachlor	10.46	10.41	10.51	0.010	0.010	3.8
Endosulfan I	12.82	12.76	12.90	0.010	0.010	1.9
Dieldrin	13.50	13.43	13.57	0.021	0.020	3.8
Endrin	13.89	13.82	13.96	0.021	0.020	4.3
4,4'-DDD	14.56	14.49	14.63	0.021	0.020	3.8
4,4'-DDT	14.86	14.79	14.93	0.020	0.020	0.7
Methoxychlor	16.04	15.97	16.11	0.101	0.100	0.9
Tetrachloro-m-xylene	7.40	7.35	7.45	0.010	0.010	4.2
Decachlorobiphenyl	19.57	19.47	19.67	0.020	0.020	-2.0

EPA Sample No.(INDB): INDBM16M Date Analyzed : 12/02/96  
 Lab Sample ID (INDB): 5-264-1616M Time Analyzed : 1646

INDIVIDUAL MIX B COMPOUND	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
beta-BHC	11.50	11.45	11.55	0.011	0.010	10.1
delta-BHC	11.95	11.90	12.00	0.011	0.010	11.1
Aldrin	10.98	10.93	11.03	0.011	0.010	9.7
Heptachlor epoxide	12.32	12.25	12.39	0.011	0.010	9.2
4,4'-DDE	13.14	13.07	13.21	0.022	0.020	10.4
Endosulfan II	14.75	14.69	14.83	0.023	0.020	12.9
Endosulfan sulfate	16.20	16.13	16.27	0.022	0.020	9.6
Endrin ketone	17.12	17.06	17.20	0.022	0.020	9.4
Endrin aldehyde	15.54	15.48	15.62	0.021	0.020	3.4
alpha-Chlordane	13.04	12.97	13.11	0.011	0.010	9.5
gamma-Chlordane	12.90	12.83	12.97	0.011	0.010	9.0
Tetrachloro-m-xylene	7.40	7.35	7.45	0.011	0.010	11.4
Decachlorobiphenyl	19.56	19.47	19.67	0.021	0.020	6.5

410

7E  
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022  
 Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24  
 GC Column: DB-17 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96  
 EPA Sample No.(PIBLK): PIBLK16Q Date Analyzed : 12/02/96  
 Lab Sample ID (PIBLK): 5-266-1616Q Time Analyzed : 1546  
 EPA Sample No.(INDA): INDAM16M Date Analyzed : 12/02/96  
 Lab Sample ID (INDA): 5-261-1616M Time Analyzed : 1616

INDIVIDUAL MIX A COMPOUND	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC	9.58	9.53	9.63	0.010	0.010	4.6
gamma-BHC (Lindane)	10.43	10.38	10.48	0.011	0.010	5.9
Heptachlor	11.12	11.07	11.17	0.011	0.010	10.9
Endosulfan I	13.65	13.58	13.72	0.010	0.010	-1.0
Dieldrin	14.25	14.18	14.32	0.021	0.020	3.1
Endrin	14.98	14.91	15.05	0.021	0.020	3.7
4,4'-DDD	15.09	15.02	15.16	0.021	0.020	4.3
4,4'-DDT	15.72	15.65	15.79	0.020	0.020	-2.5
Methoxychlor	17.86	17.79	17.93	0.100	0.100	0.1
Tetrachloro-m-xylene	8.03	7.98	8.08	0.010	0.010	2.5
Decachlorobiphenyl	22.91	22.82	23.02	0.019	0.020	-3.5

EPA Sample No.(INDB): INDBM16M Date Analyzed : 12/02/96  
 Lab Sample ID (INDB): 5-264-1616M Time Analyzed : 1646

INDIVIDUAL MIX B COMPOUND	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
beta-BHC	10.57	10.52	10.62	0.011	0.010	12.5
delta-BHC	11.35	11.29	11.39	0.011	0.010	10.2
Aldrin	11.82	11.77	11.87	0.011	0.010	7.0
Heptachlor epoxide	12.94	12.87	13.01	0.011	0.010	7.5
4,4'-DDE	14.01	13.94	14.08	0.022	0.020	8.7
Endosulfan II	15.33	15.26	15.40	0.021	0.020	6.5
Endosulfan sulfate	16.30	16.23	16.37	0.021	0.020	7.1
Endrin ketone	18.46	18.39	18.53	0.022	0.020	7.4
Endrin aldehyde	16.02	15.95	16.09	0.021	0.020	6.5
alpha-Chlordane	13.57	13.50	13.64	0.011	0.010	5.7
gamma-Chlordane	13.26	13.19	13.33	0.011	0.010	6.2
Tetrachloro-m-xylene	8.03	7.98	8.08	0.011	0.010	9.6
Decachlorobiphenyl	22.91	22.82	23.02	0.021	0.020	5.9

411

7D  
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022  
 Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24  
 GC Column: DB-1701 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No.(PIBLK): Date Analyzed:

Lab Sample ID (PIBLK): Time Analyzed:

EPA Sample No.(PEM): PEM16K Date Analyzed: 12/01/96

Lab Sample ID (PEM): 5-312-1616K Time Analyzed: 2247

PEM COMPOUND	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC	9.28	9.23	9.33	0.005	0.005	-1.8
beta-BHC	11.50	11.45	11.55	0.005	0.005	-3.2
gamma-BHC (Lindane)	10.09	10.03	10.13	0.005	0.005	-2.7
Endrin	13.90	13.82	13.96	0.025	0.025	0.5
4,4'-DDT	14.86	14.79	14.93	0.042	0.050	-15.6
Methoxychlor	16.05	15.97	16.11	0.113	0.125	-9.5

4,4'-DDT % breakdown (1): 0.0

Endrin % breakdown (1): 0.0

Combined % breakdown (1): 0.0

7D  
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022  
 Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24  
 GC Column: DB-1701 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No.(PIBLK): PIBLK16P Date Analyzed : 12/02/96  
 Lab Sample ID (PIBLK): 5-266-1616P Time Analyzed : 0546  
 EPA Sample No.(PEM): PEM16L Date Analyzed : 12/02/96  
 Lab Sample ID (PEM): 5-312-1616L Time Analyzed : 0616

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	9.28	9.23	9.33	0.005	0.005	0.0
beta-BHC	11.50	11.45	11.55	0.005	0.005	2.3
gamma-BHC (Lindane)	10.08	10.03	10.13	0.005	0.005	1.7
Endrin	13.89	13.82	13.96	0.027	0.025	7.3
4,4'-DDT	14.86	14.79	14.93	0.045	0.050	-9.5
Methoxychlor	16.04	15.97	16.11	0.120	0.125	-3.4

4,4'-DDT % breakdown (1): 2.9 Endrin % breakdown (1): 0.0  
 Combined % breakdown (1): 2.9

407

7D  
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022  
 Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24  
 GC Column: DB-17 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No.(PIBLK): Date Analyzed :

Lab Sample ID (PIBLK): Time Analyzed :

EPA Sample No.(PEM): PEM16K Date Analyzed : 12/01/96

Lab Sample ID (PEM): 5-312-1616K Time Analyzed : 2247

PEM COMPOUND	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC	9.58	9.53	9.63	0.005	0.005	-2.6
beta-BHC	10.57	10.52	10.62	0.005	0.005	-0.1
gamma-BHC (Lindane)	10.43	10.38	10.48	0.005	0.005	-1.9
Endrin	14.98	14.91	15.05	0.025	0.025	-0.4
4,4'-DDT	15.72	15.65	15.79	0.046	0.050	-8.2
Methoxychlor	17.86	17.79	17.93	0.115	0.125	-7.7

4,4'-DDT % breakdown (1): 0.0

Endrin % breakdown (1): 0.0

Combined % breakdown (1): 0.0



7D  
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022  
 Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24  
 GC Column: DB-17 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No.(PIBLK): PIBLK16P Date Analyzed : 12/02/96  
 Lab Sample ID (PIBLK): 5-266-1616P Time Analyzed : 0546  
 EPA Sample No.(PEM): PEM16L Date Analyzed : 12/02/96  
 Lab Sample ID (PEM): 5-312-1616L Time Analyzed : 0616

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	9.58	9.53	9.63	0.005	0.005	-0.1
beta-BHC	10.57	10.52	10.62	0.005	0.005	7.6
gamma-BHC (Lindane)	10.43	10.38	10.48	0.005	0.005	2.2
Endrin	14.97	14.91	15.05	0.026	0.025	4.1
4,4'-DDT	15.72	15.65	15.79	0.048	0.050	-3.4
Methoxychlor	17.86	17.79	17.93	0.121	0.125	-2.8

4,4'-DDT % breakdown (1): 0.0 Endrin % breakdown (1): 0.0  
 Combined % breakdown (1): 0.0

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PIBLK16P

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG24

Matrix: (soil/water) WATER

Lab Sample ID: 5-266-1616P

Sample wt/vol: \_\_\_\_\_ (g/mL)

Lab File ID: \_\_\_\_\_

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_

Date Received: \_\_\_\_\_

Extraction: (SepF/Cont/Sonc) \_\_\_\_\_

Date Extracted: \_\_\_\_\_

Concentrated Extract Volume: \_\_\_\_\_ (uL)

Date Analyzed: 12/02/96

Injection Volume: 0.5(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: \_\_\_\_\_

Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

470

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PIBLK16P

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG24

Matrix: (soil/water) WATER

Lab Sample ID: 5-266-1616P

Sample wt/vol: \_\_\_\_\_ (g/mL)

Lab File ID: \_\_\_\_\_

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_

Date Received: \_\_\_\_\_

Extraction: (SepF/Cont/Sonc) \_\_\_\_\_

Date Extracted: \_\_\_\_\_

Concentrated Extract Volume: \_\_\_\_\_ (uL)

Date Analyzed: 12/02/96

Injection Volume: 0.5(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: \_\_\_\_\_

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

471

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PIBLK16Q

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG24

Matrix: (soil/water) WATER

Lab Sample ID: 5-266-1616Q

Sample wt/vol: \_\_\_\_\_ (g/mL)

Lab File ID: \_\_\_\_\_

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_

Date Received: \_\_\_\_\_

Extraction: (SepF/Cont/Sonc) \_\_\_\_\_

Date Extracted: \_\_\_\_\_

Concentrated Extract Volume: \_\_\_\_\_ (uL)

Date Analyzed: 12/02/96

Injection Volume: 0.5(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: \_\_\_\_\_

Sulfur Cleanup: (Y/N) N

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6-----	alpha-BHC	0.050	U
319-85-7-----	beta-BHC	0.050	U
319-86-8-----	delta-BHC	0.050	U
58-89-9-----	gamma-BHC (Lindane)	0.050	U
76-44-8-----	Heptachlor	0.050	U
309-00-2-----	Aldrin	0.050	U
1024-57-3-----	Heptachlor epoxide	0.050	U
959-98-8-----	Endosulfan I	0.050	U
60-57-1-----	Dieldrin	0.10	U
72-55-9-----	4,4'-DDE	0.10	U
72-20-8-----	Endrin	0.10	U
33213-65-9-----	Endosulfan II	0.10	U
72-54-8-----	4,4'-DDD	0.10	U
1031-07-8-----	Endosulfan sulfate	0.10	U
50-29-3-----	4,4'-DDT	0.10	U
72-43-5-----	Methoxychlor	0.50	U
53494-70-5-----	Endrin ketone	0.10	U
7421-93-4-----	Endrin aldehyde	0.10	U
5103-71-9-----	alpha-Chlordane	0.050	U
5103-74-2-----	gamma-Chlordane	0.050	U
8001-35-2-----	Toxaphene	5.0	U
12674-11-2-----	Aroclor-1016	1.0	U
11104-28-2-----	Aroclor-1221	2.0	U
11141-16-5-----	Aroclor-1232	1.0	U
53469-21-9-----	Aroclor-1242	1.0	U
12672-29-6-----	Aroclor-1248	1.0	U
11097-69-1-----	Aroclor-1254	1.0	U
11096-82-5-----	Aroclor-1260	1.0	U

474

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PIBLK16Q

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG24

Matrix: (soil/water) WATER

Lab Sample ID: 5-266-1616Q

Sample wt/vol: \_\_\_\_\_ (g/mL)

Lab File ID: \_\_\_\_\_

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_

Date Received: \_\_\_\_\_

Extraction: (SepF/Cont/Sonc) \_\_\_\_\_

Date Extracted: \_\_\_\_\_

Concentrated Extract Volume: \_\_\_\_\_ (uL)

Date Analyzed: 12/02/96

Injection Volume: 0.5(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: \_\_\_\_\_

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

475



United States Environmental Protection Agency  
Contract Laboratory Program

**Organic Traffic Report  
& Chain of Custody Record**  
(For Organic CLP Analysis)

Case No.

25159

1. Project Code —	Account Code —	2. Region No. 6	Sampling Co. Roy F. Weston	4. Date Shipped —	Carrier —	6. Matrix (Enter in Column A)  1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A)	7. Preservative (Enter in Column D)  1. HCl 2. HNO <sub>3</sub> 3. NaHSO <sub>4</sub> 4. H <sub>2</sub> SO <sub>4</sub> 5. Ice only 6. Other (Specify in Column D) N. Not preserved
Regional Information —		Sampler (Name) Eric Tate		Airbill Number —			
Non-Superfund Program —		Sampler Signature <i>Eric Tate</i>		5. Ship To AATS 1900 West Allany, Suite C Broken Arrow, OK 74012 (918) 251-2858			
Site Name Wilcox Oil		3. Purpose* Early Action Lead <input type="checkbox"/> SF <input type="checkbox"/> PRP <input type="checkbox"/> ST <input type="checkbox"/> FED CLEM <input type="checkbox"/> PA <input type="checkbox"/> REM <input type="checkbox"/> RI <input checked="" type="checkbox"/> SI <input type="checkbox"/> ESI Long-Term Action <input type="checkbox"/> FS <input type="checkbox"/> RD <input type="checkbox"/> RA <input type="checkbox"/> O&M <input type="checkbox"/> NPLD		ATTN: Harry Borg			
City, State Bristow, OK		Site Spill ID 22					

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp. Grab	D Preservative (from Box 7) Other:	E RAS Analysis				F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval — = Not a QC Sample
					VOA	BNA	Pos/POB	High only ARO/TOX						
FFG06	5	L	G	5	X	X	X		6-015017-19	SED05	11/19/96 1430	MFG248	ECT	—
FFG11	5	L	G	5	X	X	X		6-015037-39	SS01	11/19/96 1210	MFG253	ECT	—
FFG12	5	L	G	5	X	X	X		6-015041-43	SS02	11/19/96 1215	MFG254	ECT	—
FFG13	5	L	G	5	X	X	X		6-015045-47	SS03	11/19/96 1230	MFG255	ECT	—
FFG17	5	L	G	5	X	X	X		6-015061-63	SS07	11/19/96 1405	MFG259	ECT	—
FFG18	5	L	G	5	X	X	X		6-015065-67	SS08	11/19/96 1415	MFG260	ECT	D(FFG17)
FFG21	5	L	G	5	X	X	X		6-015077-79	SS11	11/19/96 1350	MFG263	ECT	—
FFG09	5	L	G	5	X	X	X		6-015029-31	SED08	11/19/96 1020	MFG251	ECT	—
FFG10	5	L	G	5	X	X	X		6-015033-35	SED09	11/19/96 1105	MFG252	ECT	—
FFG24	5	L	G	5	X	X	X		6-015089-91	SED18	11/19/96 1535	MFG266	ECT	—

Shipment for Case Complete? (Y/N) <input checked="" type="checkbox"/> Y	Page 1 of 2	Sample(s) to be Used for Laboratory QC FFG 24	Additional Sampler Signatures <i>Eric Tate</i> <i>Harry Borg</i>	Chain of Custody Seal Number(s)
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CHAIN OF CUSTODY RECORD

Relinquished by: (Signature) <i>Eric Tate</i>	Date / Time 11/19/96 1300	Received by: (Signature) <i>Tim Ruchat</i>	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? Y/N/none

DISTRIBUTION: Blue - Region Copy  
White - Lab Copy for Return to Region

Pink - CLASS Copy  
Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS  
SEE REVERSE FOR PURPOSE CODE DEFINITIONS





## Case No.

25159

[illegible]

## CHAIN OF CUSTODY RECORD

Relinquished by: (Signature) <i>Eric Tate</i>	Date / Time 11/1/96 1830	Received by: (Signature) <i>Byron [Signature]</i>	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? Y/N/none

**DISTRIBUTION:** Blue - Region Copy  
White - Lab Copy for Return to Region

**Pink - CLASS Copy**  
**Yellow - Lab Copy for Return to CLASS**

EPA Form 9110-2

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS  
\*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

365798

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	52
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United States Environmental Protection Agency  
Contract Laboratory Program

# Organic Traffic Report & Chain of Custody Record (For Organic CLP Analysis)

Case No.

35150

1. Matrix (Enter in Column A)  1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A)	2. Preservative (Enter in Column D)  1. HCl 2. HNO <sub>3</sub> 3. NaHSO <sub>4</sub> 4. H <sub>2</sub> SO <sub>4</sub> 5. Ice only 6. Other (Specify in Column D) N. Not preserved	2. Region No.	Sampling Co.	4. Date Shipped	Carrier	6. Date Received -- Received by:	
		6	Ray F. Weston	—	—	11/18/96	
		Sampler (Name)		Airbill Number		Laboratory Contract Number	Unit Price
		Eric Tate		—			
Sampler Signature		5. Ship To		7. Transfer to:		Date Received	
Eric Tate		AAT					
3. Purpose*		Early Action		Long-Term Action		Received by	
Lead		CLEM		FS			
SF		PA		RD			
PRP		REM		RA			
ST		RI		O&M			
FED		ESI		NPLD			
		ATTN: Harry Bag				Contract Number	
						Price	

CLP Sample Numbers (from labels)	A Matrix (from Box 1) Other:	B Conc.: Low Med High	C Sample Type: Comp. Grab	D Preservative (from Box 2) Other:	E RAS Analysis				F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K High Phases		
					VOA	BNA	Pes/PCB	High only ARO/TOX						Solids	Water-Miscible Lq.	Water-Immis. Lq.
FFC12	S	L	G	S	X	X	X		6-015001-02	SED01	11/14/96 1155	MEG244	ET			
FFC13	S	L	G	S	X	X	X		6-015005-07	SED02	11/14/96 1155	MEG245	ET			
FFC14	S	L	G	S	X	X	X		6-015007-11	SED03	11/14/96 1155	MEG246	ET			
FFC15	S	L	G	S	X	X	X		6-015013-15	SED04	11/14/96 1155	MEG247	ET			
FFC17	S	L	G	S	X	X	X		6-015021-23	SED05	11/14/96 1155	MEG248	ET			
FFC18	S	L	G	S	X	X	X		6-015025-27	SED06	11/14/96 1155	MEG249	ET			
FFC19	S	L	G	S	X	X	X		6-015026-28	SED07	11/14/96 1155	MEG250	ET			
FFC14	S	L	G	S	X	X	X		6-015026-28	SED04	11/14/96 1210	MEG251	ET			
FFC15	S	L	G	S	X	X	X		6-015026-28	SED05	11/14/96 1155	MEG252	ET			
FFC16	S	L	G	S	X	X	X		6-015026-28	SED06	11/14/96 1155	MEG253	ET			
FFC17	S	L	G	S	X	X	X		6-015026-28	SED07	11/14/96 1223	MEG254	ET			

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y)	1 of 2	FFC12		

## CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Eric Tate	11/14/96				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? (Y/N/none)
		Harry Bag	11/18/96 1930	intact	Y

DISTRIBUTION: Blue - Region Copy  
White - Lab Copy for Return to Region

Pink - CLASS Copy  
Yellow - Lab Copy for Return to CLASS

FFC02

EPA Form 9110-2

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS  
SEE REVERSE FOR PURPOSE CODE DEFINITIONS

3 0 0

## Organic Traffic Report & Chain of Custody Record (For Organic CLP Analysis)

Case No.

25152

1. Matrix (Enter in Column A)	2. Preservative (Enter in Column D)	2. Region No.	Sampling Co.	4. Date Shipped	Carrier	6. Date Received -- Received by:
1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A)	1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. Other (Specify in Column D) N. Not preserved	6	Roy F. Western	---	---	<i>M. M. ...</i> 11/18/96
		Sampler (Name)		Airbill Number		Laboratory Contract Number
		Eric Tate		---		Unit Price
		Sampler Signature		5. Ship To		7. Transfer to:
		<i>Eric Tate</i>		AATS 1700 West Albany, Suite C Broken Arrow, OK 74012 (918) 251-2855		Date Received
		3. Purpose*		ATTN: <i>...</i>		Received by
		Early Action				Contract Number
		Long-Term Action				Price
		<input type="checkbox"/> CLEM <input type="checkbox"/> PA <input type="checkbox"/> REM <input type="checkbox"/> RI <input type="checkbox"/> SI <input checked="" type="checkbox"/> YESI				
		<input type="checkbox"/> SF <input type="checkbox"/> PRP <input type="checkbox"/> ST <input type="checkbox"/> FED				

[illegible]

### CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
		11-1-11 [Signature]			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks is custody seal intact? <input checked="" type="checkbox"/> Y / <input type="checkbox"/> N / none	
		[Signature]	11/8/96 1930	intact	

**DISTRIBUTION:** Blue - Region Copy  
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Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS  
\*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

365796



United States Environmental Protection Agency  
Contract Laboratory Program

# Organic Traffic Report & Chain of Custody Record (For Organic CLP Analysis)

Case No.

25159

1. Matrix (Enter in Column A)  1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A)	2. Preservative (Enter in Column D)  1. HCl 2. HNO <sub>3</sub> 3. NaHSO <sub>4</sub> 4. H <sub>2</sub> SO <sub>4</sub> 5. Ice only 6. Other (Specify in Column D) N. Not preserved	2. Region No.	3. Sampling Co.	4. Date Shipped	Carrier	6. Date Received -- Received by: <i>M. McLeod</i> 11/19/96		
			<i>6</i> <i>Roy F. Weston</i>				Laboratory Contract Number	Unit Price
		Sampler (Name) <i>Eric Tate</i>		Airbill Number				
		Sampler Signature <i>Eric Tate</i>		5. Ship To <i>AATS</i> <i>1706 West Albany, Suite C</i> <i>Broken Arrow, OK 74012</i> <i>(918) 251-2858</i>		7. Transfer to:	Date Received	
		3. Purpose* Early Action Lead <input type="checkbox"/> SF <input type="checkbox"/> PRP <input type="checkbox"/> ST <input type="checkbox"/> FED CLEM <input type="checkbox"/> PA <input type="checkbox"/> REM <input type="checkbox"/> RI <input type="checkbox"/> SI <input checked="" type="checkbox"/> ESI Long-Term Action <input type="checkbox"/> FS <input type="checkbox"/> RD <input type="checkbox"/> RA <input type="checkbox"/> O&M <input type="checkbox"/> NPLD		ATTN: <i>Hurdy Berg</i>		Received by		
						Contract Number	Price	

CLP Sample Numbers (from labels)	A Matrix (from Box 1) Other:	B Conc.: Low Med High	C Sample Type: Comp. Grab	D Preservative (from Box 2) Other:	E RAS Analysis				F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K High Phases		
					VOA	BNA	PAH	High only ARO/TOX						Solids	Water-Miscible Liq.	Water-Immisc. Liq.
FFG06	S	L	G	S	X	X	X		6-015017-19	SEDA	11/19/96 1:00	MEG241	ECT			
FFG11	S	L	G	S	X	X	X		6-015037-39	SS91	11/19/96 1:10	MEG251	ECT			
FFG12	S	L	G	S	X	X	X		6-015041-43	SS02	11/19/96 1:21	MEG254	ECT			
FFG13	S	L	G	S	X	X	X		6-015045-47	SS03	11/19/96 1:22	MEG255	ECT			
FFG17	S	L	G	S	X	X	X		6-015061-63	SS07	11/19/96 1:40	MEG258	ECT			
FFG18	S	L	G	S	X	X	X		6-015065-67	SS08	11/19/96 1:41	MEG260	ECT			
FFG21	S	L	G	S	X	X	X		6-015077-79	SS11	11/19/96 1:42	MEG263	ECT			
FFG09	S	L	G	S	X	X	X		6-015033-31	SEDA	11/19/96 1:46	MEG251	ECT			
FFG10	S	L	G	S	X	X	X		6-015038-35	SEDA	11/19/96 1:45	MEG251	ECT			
FFG24	S	L	G	S	X	X	X		6-015089-91	SEDA	11/19/96 1:53	MEG266	ECT			

Shipment for Case Complete? (Y/N)	Page <i>21</i> of <i>21</i>	Sample(s) to be Used for Laboratory QC <i>FFG24</i>	Additional Sampler Signatures	Chain of Custody Seal Number(s)
-----------------------------------	-----------------------------	--	-------------------------------	---------------------------------

\* *SDG Final Sample*

## CHAIN OF CUSTODY RECORD

Relinquished by: (Signature) <i>Eric Tate</i>	Date / Time <i>11/19/96 1:50</i>	Received by: (Signature) <i>T. ...</i>	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) <i>M. McLeod</i>	Date / Time <i>11/19/96 19:00</i>	Remarks <i>intact</i>	Is custody seal intact? (Y/N) <i>none</i>

DISTRIBUTION: Blue - Region Copy  
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EPA Form 9110-2

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS  
SEE REVERSE FOR PURPOSE CODE DEFINITIONS

36-017

A21-012-16 REV.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09RB	FF-G10	FF-G11	FF-G12	FF-G13
Carbazole	46 J	460 U	460 U *	400 U	410 U	410 U	380 U
Di-n-butylphthalate	430 U	460 U	460 U *	400 U	410 U	23 J	380 U
Fluoranthene	240 J	460 U	460 U *	400 U	410 U	68 J	380 U
Pyrene	170 J	49 J	43 *	400 U	410 U	62 J	380 U
Butylbenzylphthalate	48 J	29 J	32 *	400 U	25 J	21 J	380 U
3,3'-Dichlorobenzidine	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Benzo(a)anthracene	430 U	460 U	460 U *	400 U	410 U	36 J	380 U
Chrysene	96 J	49 J	44 *	400 U	410 U	50 J	380 U
bis(2-Ethylhexyl)phthalate	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Di-n-octylphthalate	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Benzo(b)fluoranthene	430 U	31 J	29 *	400 U	410 U	42 J	380 U
Benzo(k)fluoranthene	430 U	31 J	29 *	400 U	410 U	51 J	380 U
Benzo(a)pyrene	430 U	27 J	24 *	400 U	410 U	36 J	380 U
Indeno(1,2,3-cd)pyrene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Dibenz(a,h)anthracene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Benzo(g,h,i)perylene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	23	29	29	18	19	20	14
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	35	33	28	21	35	26	35

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G06RE	FF-G.7
Phenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
bis(2-Chloroethyl) ether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Chlorophenol	400 U	390 U	42 J	410 U	420 U *	420 UJv	440 U
1,3-Dichlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
1,4-Dichlorobenzene	400 U	390 U	29 J	410 U	420 U *	420 UJv	440 U
1,2-Dichlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,2'-Oxybis(1-chloropropane)	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
N-Nitroso-di-n-propylamine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachloroethane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Nitrobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Isophorone	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitrophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dimethylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
bis(2-Chloroethoxy) methane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dichlorophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
1,2,4-Trichlorobenzene	400 U	390 U	27 J	410 U	420 U *	420 UJv	440 U
Naphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloroaniline	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachlorobutadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloro-3-methylphenol	400 U	390 U	34 J	410 U	420 U *	420 UJv	440 U
2-Methylnaphthalene	400 U	390 U	420 U	60 J	420 U *	420 UJv	440 U
Hexachlorocyclopentadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,6-Trichlorophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,5-Trichlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
2-Chloronaphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dimethylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Acenaphthylene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,6-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
3-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Acenaphthene	400 U	390 U	32 J	22 J	420 U *	420 UJv	440 U
2,4-Dinitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4-Nitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dibenzofuran	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Diethylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chlorophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Fluorene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4,6-Dinitro-2-methylphenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
N-Nitrosodiphenylamine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Bromophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Pentachlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Phenanthrene	400 U	390 U	420 U	220 J	46 *	420 UJv	440 U
Anthracene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G18	FF-G18RE	FF-G21	FF-G21RE	FF-G22	FF-G22RE	FF-G23
Phenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
bis(2-Chloroethyl)ether	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Chlorophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,3-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,4-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,2-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,2'-Oxybis(1-chloropropane)	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
N-Nitroso-di-n-propylamine	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachloroethane	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Nitrobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Isophorone	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Nitrophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,4-Dimethylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
bis(2-Chloroethoxy)methane	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,4-Dichlorophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,2,4-Trichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Naphthalene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Chloroaniline	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachlorobutadiene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Chloro-3-methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Methylnaphthalene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachlorocyclopentadiene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4,6-Trichlorophenol	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4,5-Trichlorophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
2-Chloronaphthalene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Dimethylphthalate	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Acenaphthylene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,6-Dinitrotoluene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
3-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Acenaphthene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4-Dinitrophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
4-Nitrophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Dibenzofuran	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4-Dinitrotoluene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Diethylphthalate	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
4-Chlorophenyl-phenylether	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Fluorene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
4-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
4,6-Dinitro-2-methylphenol	1000 U	1000 U *	1000 U	1000 U *	1000 UJv	1000 U *	1000 U
N-Nitrosodiphenylamine	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
4-Bromophenyl-phenylether	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Hexachlorobenzene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Pentachlorophenol	1000 U	1000 U *	1000 U	1000 U *	1000 UJv	1000 U *	1000 U
Phenanthrene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	35 U
Anthracene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE ROAD  
HOUSTON, TEXAS 77099

RESUBMITTED DATA REVIEW REPORT

DATE :	January 24, 1997	CASE #:	25159
TO :	L. Biasco	SAS # :	
	(6SF-RA)	SDG # :	FEG02
FROM :	Maria Missler	LAB :	AATS
	(LMSG)	SITE :	Wilcox Oil
	ESAT - Region 6	TDF # :	
		ESAT #:	O-1780

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Laboratory response to Region 6 FAX request: (received 1/21/97)

A. BNA

- 1-2 The laboratory did not make any corrections based on the premise that the CLP contract does not state specifically that two TIC's cannot have the same CAS number and compound name. This response does not affect the original data assessment.
3. Sample FF-G16: The laboratory corrected and resubmitted Form I SV-2 and the quantitation report. Please replace pages 1297 and 1301 with the resubmitted ones and insert submitted pages 1301A-B.
4. Samples FF-G03, FF-G04, FF-G07, and FF-G10: The laboratory revised and resubmitted TIC data for these samples. Please replace pages 503, 508, 509, 522, 531, 532, 912, and 916-918 and insert pages 509A, 509B, 532A-C, 541A, 541B, 918A, and 935A.
5. The laboratory corrected and resubmitted the analysis log. Please replace page 2682 with the resubmitted one.

A revised data summary table for the BNA fraction is included with all changes in data qualification highlighted.

B. Pest/PCB

1. The laboratory corrected and resubmitted Forms VI PEST-2. Please replace pages 2327-2330 with the resubmitted ones.
2. Method blank PBLKSC: The laboratory response does not affect the original data assessment.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G23RE						
Phenol	400 U *						
bis(2-Chloroethyl) ether	400 U *						
2-Chlorophenol	400 U *						
1,3-Dichlorobenzene	400 U *						
1,4-Dichlorobenzene	400 U *						
1,2-Dichlorobenzene	400 U *						
2-Methylphenol	400 U *						
2,2'-Oxybis(1-chloropropane)	400 U *						
4-Methylphenol	400 U *						
N-Nitroso-di-n-propylamine	400 U *						
Hexachloroethane	400 U *						
Nitrobenzene	400 U *						
Isophorone	400 U *						
2-Nitrophenol	400 U *						
2,4-Dimethylphenol	400 U *						
bis(2-Chloroethoxy)methane	400 U *						
2,4-Dichlorophenol	400 U *						
1,2,4-Trichlorobenzene	400 U *						
Naphthalene	400 U *						
4-Chloroaniline	400 U *						
Hexachlorobutadiene	400 U *						
4-Chloro-3-methylphenol	400 U *						
2-Methylnaphthalene	400 U *						
Hexachlorocyclopentadiene	400 U *						
2,4,6-Trichlorophenol	400 U *						
2,4,5-Trichlorophenol	1000 U *						
2-Chloronaphthalene	400 U *						
2-Nitroaniline	1000 U *						
Dimethylphthalate	400 U *						
Acenaphthylene	400 U *						
2,6-Dinitrotoluene	400 U *						
3-Nitroaniline	1000 U *						
Acenaphthene	400 U *						
2,4-Dinitrophenol	1000 U *						
4-Nitrophenol	1000 U *						
Dibenzofuran	400 U *						
2,4-Dinitrotoluene	400 U *						
Diethylphthalate	400 U *						
4-Chlorophenyl-phenylether	400 U *						
Fluorene	400 U *						
4-Nitroaniline	1000 U *						
4,6-Dinitro-2-methylphenol	1000 U *						
N-Nitrosodiphenylamine	400 U *						
4-Bromophenyl-phenylether	400 U *						
Hexachlorobenzene	400 U *						
Pentachlorophenol	1000 U *						
Phenanthrene	35 *						
Anthracene	400 U *						

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG16

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10137.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 24 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

51-28-5-----	2,4-Dinitrophenol	1100	U
100-02-7-----	4-Nitrophenol	1100	U
132-64-9-----	Dibenzofuran	430	U
121-14-2-----	2,4-Dinitrotoluene	430	U
84-66-2-----	Diethylphthalate	430	U
7005-72-3-----	4-Chlorophenyl-phenylether	430	U
86-73-7-----	Fluorene	430	U
100-01-6-----	4-Nitroaniline	1100	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1100	U
86-30-6-----	N-Nitrosodiphenylamine (1)	430	U
101-55-3-----	4-Bromophenyl-phenylether	430	U
118-74-1-----	Hexachlorobenzene	430	U
87-86-5-----	Pentachlorophenol	1100	U
85-01-8-----	Phenanthrene	430	U
120-12-7-----	Anthracene	430	U
86-74-8-----	Carbazole	430	U
84-74-2-----	Di-n-butylphthalate	150	JB
206-44-0-----	Fluoranthene	430	U
129-00-0-----	Pyrene	430	U
85-68-7-----	Butylbenzylphthalate	100	J
91-94-1-----	3,3'-Dichlorobenzidine	430	U
56-55-3-----	Benzo(a)anthracene	90	J
218-01-9-----	Chrysene	430	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	430	U
117-84-0-----	Di-n-octylphthalate	27	J
205-99-2-----	Benzo(b)fluoranthene	430	U
207-08-9-----	Benzo(k)fluoranthene	430	U
50-32-8-----	Benzo(a)pyrene	150	J
193-39-5-----	Indeno(1,2,3-cd)pyrene	430	U
53-70-3-----	Dibenz(a,h)anthracene	430	U
191-24-2-----	Benzo(g,h,i)perylene	430	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG16

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10137.D

Level: (low/med) LOW

Date Received: 11/19/96 <sup>13</sup> 12/24/96

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 9.4

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.203	250	J
2.	UNKNOWN	3.282	1800	J
3.	UNKNOWN	3.656	460	JB
4.	UNKNOWN	3.853	360	J
5.	UNKNOWN	3.991	390	JB
6.	UNKNOWN	4.059	230	JB
7. 123-42-2	2-Pentanone, 4-hydroxy-4-met	4.158	2200	NJA
8.	UNKNOWN AMIDE	4.237	460	J
9.	UNKNOWN	4.926	160	J
10.	-Hexen--one, -methyl-	5.359	150	J
11.	UNKNOWN	7.427	150	J
12.	Phenol, -ethyl-	7.948	120	J
13.	UNKNOWN	15.526	440	J
14.	UNKNOWN	15.873	240	J
15.	UNKNOWN	17.101	280	J
16.	UNKNOWN	17.567	230	J
17.	UNKNOWN	17.875	220	J
18.	UNKNOWN	18.510	280	J
19.	UNKNOWN	19.503	260	J
20.	UNKNOWN	19.970	260	J
21.	UNKNOWN	20.358	650	J
22.	Unknown	20.437	380	J
23.	UNKNOWN	20.567	490	J
24.	UNKNOWN	20.785	220	J
25.	UNKNOWN	20.845	250	J
26.	UNKNOWN	20.895	230	J
27.	UNKNOWN	21.114	310	J
28.	UNKNOWN	21.233	420	J
29.	UNKNOWN	21.322	680	J
30.	UNKNOWN	21.531	290	J

7

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG14

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10135.D

Level: (low/med) LOW

Date Received: 11/18/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

Q

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl) Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy) methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0



1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG14

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10135.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	400	U
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	400	U
85-68-7-----	Butylbenzylphthalate	400	U
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	400	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	400	U
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG14

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10135.D

Level: (low/med) LOW Date Received: 11/18/96 *pt 12/24/96*

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 22 CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN AMIDE	3.281	130	J
2.	UNKNOWN	3.656	920	JB
3.	UNKNOWN	3.862	83	J
4.	-Buten--one, -methyl-	3.990	620	J
5. 123-42-2	2-Pentanone, 4-hydroxy-4-met	4.158	2300	NJA
6.	UNKNOWN	4.237	140	J
7.	UNKNOWN	4.926	280	J
8.	UNKNOWN	5.359	150	J
9.	-Hexen--one, -methyl-	5.487	140	J
10.	UNKNOWN	17.692	120	J
11.	UNKNOWN	20.106	230	J
12.	UNKNOWN	21.742	640	J
13.	UNKNOWN	21.860	290	J
14.	UNKNOWN	22.245	180	J
15.	UNKNOWN PAH	22.570	840	J
16.	UNKNOWN	22.679	600	J
17.	UNKNOWN PAH	22.698	500	J
18.	UNKNOWN	22.846	280	J
19.	UNKNOWN	22.915	170	J
20.	UNKNOWN	23.142	190	J
21.	UNKNOWN	24.226	1100	J
22.	UNKNOWN	24.394	600	J
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG15

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.08

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10136.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 13 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

108-95-2-----	Phenol	380	U
111-44-4-----	bis(2-Chloroethyl)Ether	380	U
95-57-8-----	2-Chlorophenol	380	U
541-73-1-----	1,3-Dichlorobenzene	380	U
106-46-7-----	1,4-Dichlorobenzene	380	U
95-50-1-----	1,2-Dichlorobenzene	380	U
95-48-7-----	2-Methylphenol	380	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	380	U
106-44-5-----	4-Methylphenol	380	U
621-64-7-----	N-Nitroso-di-n-propylamine	380	U
67-72-1-----	Hexachloroethane	380	U
98-95-3-----	Nitrobenzene	380	U
78-59-1-----	Isophorone	380	U
88-75-5-----	2-Nitrophenol	380	U
105-67-9-----	2,4-Dimethylphenol	380	U
111-91-1-----	bis(2-Chloroethoxy)methane	380	U
120-83-2-----	2,4-Dichlorophenol	380	U
120-82-1-----	1,2,4-Trichlorobenzene	380	U
91-20-3-----	Naphthalene	81	J
106-47-8-----	4-Chloroaniline	380	U
87-68-3-----	Hexachlorobutadiene	380	U
59-50-7-----	4-Chloro-3-Methylphenol	380	U
91-57-6-----	2-Methylnaphthalene	200	J
77-47-4-----	Hexachlorocyclopentadiene	380	U
88-06-2-----	2,4,6-Trichlorophenol	380	U
95-95-4-----	2,4,5-Trichlorophenol	950	U
91-58-7-----	2-Chloronaphthalene	380	U
88-74-4-----	2-Nitroaniline	950	U
131-11-3-----	Dimethylphthalate	380	U
208-96-8-----	Acenaphthylene	380	U
606-20-2-----	2,6-Dinitrotoluene	380	U
99-09-2-----	3-Nitroaniline	950	U
83-32-9-----	Acenaphthene	380	U

FORM I SV-1

OLM03.0

1163

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG15

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.08

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10136.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 13 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

51-28-5-----	2,4-Dinitrophenol	950	U
100-02-7-----	4-Nitrophenol	950	U
132-64-9-----	Dibenzofuran	380	U
121-14-2-----	2,4-Dinitrotoluene	380	U
84-66-2-----	Diethylphthalate	380	U
7005-72-3-----	4-Chlorophenyl-phenylether	380	U
86-73-7-----	Fluorene	380	U
100-01-6-----	4-Nitroaniline	950	U
534-52-1-----	4,6-Dinitro-2-methylphenol	950	U
86-30-6-----	N-Nitrosodiphenylamine (1)	380	U
101-55-3-----	4-Bromophenyl-phenylether	380	U
118-74-1-----	Hexachlorobenzene	380	U
87-86-5-----	Pentachlorophenol	950	U
85-01-8-----	Phenanthrene	✓790	U
120-12-7-----	Anthracene	380	U
86-74-8-----	Carbazole	380	U
84-74-2-----	Di-n-butylphthalate	380	U
206-44-0-----	Fluoranthene	380	U
129-00-0-----	Pyrene	560	U
85-68-7-----	Butylbenzylphthalate	380	U
91-94-1-----	3,3'-Dichlorobenzidine	380	U
56-55-3-----	Benzo(a)anthracene	300	J
218-01-9-----	Chrysene	✓690	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	380	U
117-84-0-----	Di-n-octylphthalate	380	U
205-99-2-----	Benzo(b)fluoranthene	230	J
207-08-9-----	Benzo(k)fluoranthene	380	U
50-32-8-----	Benzo(a)pyrene	250	J
193-39-5-----	Indeno(1,2,3-cd)pyrene	380	U
53-70-3-----	Dibenz(a,h)anthracene	380	U
191-24-2-----	Benzo(g,h,i)perylene	440	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1169

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG15

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.08

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10136.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 13 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN AMIDE	3.282	820	J
2.	UNKNOWN	3.665	1500	JB
3.	-Pentene, -dimethyl-	3.715	100	J
4.	UNKNOWN AMIDE	3.862	280	J
5.	-Buten--one, -methyl-	3.990	990	J
6.	UNKNOWN	4.059	200	JB
7. 123-42-2	2-Pentanone, 4-hydroxy-4-met	4.158	1900	NJ
8.	UNKNOWN	4.237	380	J
9.	Unknown	4.325	84	J
10.	UNKNOWN	4.926	420	J
11. 110-13-4	2,5-Hexanedione	5.113	130	NJ
12.	(5H)-Furanone, -dimethyl-	5.359	120	J
13. 90-12-0	Naphthalene, 1-methyl-	9.720	79	NJ
14.	Naphthalene, -dimethyl-	10.635	150	J
15.	UNKNOWN	11.157	140	J
16.	UNKNOWN	14.591	160	J
17.	UNKNOWN	14.729	160	J
18.	Anthracene, -methyl-	14.887	370	J
19.	Anthracene, -methyl-	14.936	540	J
20.	UNKNOWN	15.094	220	J
21.	1H-Indene, -phenyl-	15.123	170	J
22.	UNKNOWN	15.744	210	J
23.	Phenanthrene, -dimethyl-	15.882	170	J
24.	UNKNOWN PAH	16.128	240	J
25.	Pyrene, -methyl-	17.300	470	J
26.	Chrysene, -methyl-	19.312	570	J
27.	Triphenylene, -methyl-	19.381	440	J
28.	UNKNOWN	20.358	660	J
29. 198-55-0	Perylene	20.793	870	NJ
30.	UNKNOWN	21.741	340	J

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG15

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.08

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10136.D

Level: (low/med) LOW

Date Received: 11/19/96 <sup>13</sup> *12/24/96*

% Moisture: 13 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 35

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	22.858	760	J
2.	UNKNOWN	23.174	320	J
3.	Unknown	23.470	370	J
4.	UNKNOWN	23.549	680	J
5.	UNKNOWN	23.648	530	J
6.				
7.				
8.				
9.				
10.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG15RE

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.08RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10195.D

Level: (low/med) LOW Date Received: 11/19/96 *of 12/1/96*

% Moisture: 13 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/05/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NO. COMPOUND Q

108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)Ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-oxybis(1-Chloropropane)	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-Methylphenol	380	U
91-57-6	2-Methylnaphthalene	180	J
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	950	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	950	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U
99-09-2	3-Nitroaniline	950	U
83-32-9	Acenaphthene	380	U

FORM I SV-1

OLM03.0

1230

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG15RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.08RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10195.D

Level: (low/med) LOW

Date Received: 11/18/96 <sup>18</sup> 12/24/96

% Moisture: 13 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

51-28-5-----	2,4-Dinitrophenol	950	U
100-02-7-----	4-Nitrophenol	950	U
132-64-9-----	Dibenzofuran	380	U
121-14-2-----	2,4-Dinitrotoluene	380	U
84-66-2-----	Diethylphthalate	380	U
7005-72-3-----	4-Chlorophenyl-phenylether	380	U
86-73-7-----	Fluorene	380	U
100-01-6-----	4-Nitroaniline	950	U
534-52-1-----	4,6-Dinitro-2-methylphenol	950	U
86-30-6-----	N-Nitrosodiphenylamine (1)	380	U
101-55-3-----	4-Bromophenyl-phenylether	380	U
118-74-1-----	Hexachlorobenzene	380	U
87-86-5-----	Pentachlorophenol	950	U
85-01-8-----	Phenanthrene	820	
120-12-7-----	Anthracene	380	U
86-74-8-----	Carbazole	380	U
84-74-2-----	Di-n-butylphthalate	57	JB
206-44-0-----	Fluoranthene	110	J
129-00-0-----	Pyrene	590	
85-68-7-----	Butylbenzylphthalate	380	U
91-94-1-----	3,3'-Dichlorobenzidine	380	U
56-55-3-----	Benzo(a)anthracene	280	J
218-01-9-----	Chrysene	670	
117-81-7-----	bis(2-Ethylhexyl)phthalate	380	U
117-84-0-----	Di-n-octylphthalate	380	U
205-99-2-----	Benzo(b)fluoranthene	210	J
207-08-9-----	Benzo(k)fluoranthene	58	J
50-32-8-----	Benzo(a)pyrene	240	J
193-39-5-----	Indeno(1,2,3-cd)pyrene	380	U
53-70-3-----	Dibenz(a,h)anthracene	380	U
191-24-2-----	Benzo(g,h,i)perylene	380	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1231

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG15RE

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.08RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10195.D

Level: (low/med) LOW Date Received: 11/19/96 *12/4/96*

% Moisture: 13 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/05/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 35

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.104	960	J
2.	UNKNOWN	3.154	84	J
3.	UNKNOWN	3.488	1200	JB
4.	UNKNOWN	3.665	200	JB
5.	UNKNOWN	3.813	930	J
6. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.981	1800	NJB
7.	UNKNOWN	4.059	300	JB
8.	UNKNOWN HYDROCARBON	4.168	95	J
9.	UNKNOWN	4.247	180	J
10.	UNKNOWN	4.709	440	J
11.	UNKNOWN	4.749	620	J
12. 110-13-4	2,5-Hexanedione	4.896	140	NJ
13.	UNKNOWN	5.142	82	JB
14.	UNKNOWN	6.393	120	J
15.	UNKNOWN	7.672	92	J
16. 90-12-0	Naphthalene, 1-methyl-	9.453	100	NJ
17.	Naphthalene, -dimethyl-	10.379	170	J
18.	Naphthalene, -dimethyl-	10.526	85	J
19.	UNKNOWN	10.723	110	J
20.	UNKNOWN	13.528	170	J
21.	UNKNOWN PAH	14.306	150	J
22.	UNKNOWN PAH	14.454	130	J
23.	Anthracene, -methyl-	14.611	420	J
24.	Anthracene, -methyl-	14.661	630	J
25.	Anthracene, -methyl-	14.720	180	J
26.	Phenanthrene, -methyl-	14.809	130	J
27.	Phenanthrene, -dimethyl-	15.400	120	J
28.	Phenanthrene, -dimethyl-	15.459	140	J
29.	Phenanthrene, -dimethyl-	15.597	160	J
30.	Pyrene, -methyl-	17.017	410	J

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG15RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.08RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10195.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 13 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.7

Number TICs found: 35

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Chrysene, -methyl-	19.029	490	J
2.	Chrysene, -methyl-	19.108	540	J
3.	UNKNOWN	20.104	820	J
4.	UNKNOWN	20.499	500	J
5.	UNKNOWN	23.184	590	J
6.				
7.				
8.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG16

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10137.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	430	U
111-44-4-----	bis(2-Chloroethyl) Ether	430	U
95-57-8-----	2-Chlorophenol	430	U
541-73-1-----	1,3-Dichlorobenzene	430	U
106-46-7-----	1,4-Dichlorobenzene	430	U
95-50-1-----	1,2-Dichlorobenzene	430	U
95-48-7-----	2-Methylphenol	61	J
108-60-1-----	2,2'-oxybis(1-Chloropropane)	430	U
106-44-5-----	4-Methylphenol	94	J
621-64-7-----	N-Nitroso-di-n-propylamine	430	U
67-72-1-----	Hexachloroethane	430	U
98-95-3-----	Nitrobenzene	430	U
78-59-1-----	Isophorone	430	U
88-75-5-----	2-Nitrophenol	430	U
105-67-9-----	2,4-Dimethylphenol	360	J
111-91-1-----	bis(2-Chloroethoxy) methane	430	U
120-83-2-----	2,4-Dichlorophenol	430	U
120-82-1-----	1,2,4-Trichlorobenzene	430	U
91-20-3-----	Naphthalene	430	U
106-47-8-----	4-Chloroaniline	430	U
87-68-3-----	Hexachlorobutadiene	430	U
59-50-7-----	4-Chloro-3-Methylphenol	430	U
91-57-6-----	2-Methylnaphthalene	430	U
77-47-4-----	Hexachlorocyclopentadiene	430	U
88-06-2-----	2,4,6-Trichlorophenol	430	U
95-95-4-----	2,4,5-Trichlorophenol	1100	U
91-58-7-----	2-Chloronaphthalene	430	U
88-74-4-----	2-Nitroaniline	1100	U
131-11-3-----	Dimethylphthalate	430	U
208-96-8-----	Acenaphthylene	430	U
606-20-2-----	2,6-Dinitrotoluene	430	U
99-09-2-----	3-Nitroaniline	1100	U
83-32-9-----	Acenaphthene	430	U

FORM I SV-1

OLM03.0

1296



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE RD.  
HOUSTON, TEXAS 77099

MEMORANDUM

Date: 1-21-1997  
Subject: Contract Laboratory Program Data Review  
From: *M. Humphrey*  
Melvin L. Ritter, ESAT RPO, 6MD-HC  
To: L. Biasco, 6SF-RA

Site: WILCOX OIL  
Case#: 25159  
SDG#: FF-G02

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- ( ) Acceptable: No major problems with data package.
- (X) Provisional: Use of data requires caution.  
Data is acceptable for Regional use. Problems are noted in the review report.
- ( ) Unacceptable: Some or all of data should not be used.  
Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

cc: R. Flores, Region 6 CLP/TPO  
M. El-feky, Region 6 Data Coordinator

Files (2)



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LOCKHEED MARTIN SERVICES GROUP  
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MEMORANDUM

DATE: January 10, 1997  
TO: Dr. Melvin Ritter, ESAT RPO, Region VI  
FROM: Dr. Tom C. H. Chiang, ESAT ETM, Region VI *Tom C. H. Chiang*  
SUBJECT: CLP Data Review  
REF: TDF # 6-7113A  
ESAT # O-1780

Attached is the data review summary for Case # 25159  
SDG # FFG02  
Site Wilcox Oil

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF THE DATA PACKAGE

- A. The data package contained the following contractual non-compliance as determined by the hard copy data review and the CCS audit.

The laboratory extracted BNA sample FF-G06RE 29 days after sample receipt (OLM03.0, D-18/SVOA, 8.4.1). All results were qualified for this sample because of the excessive holding time.

- B. The data package contained the following contractual non-compliance as determined by the hard copy data review but not by CCS.

1. Pest/PCB method blank PBLKSC had a peak on the DB-17 column above the CRQL that interfered with the detection of endosulfan sulfate (OLM03.0, D-73/PEST, 12.1.2.4). This deficiency caused the raised quantitation limits for endosulfan sulfate in samples FF-G15 and FF-G23.
2. The data package arrived three days late.

II. TECHNICAL/USABILITY ASSESSMENT OF THE DATA PACKAGE

A total of 2,500 results were reviewed for this data package. The data package is technically provisional and technical deficiencies are listed below.

1. One BNA sample was extracted 29 days after sample collection.
2. Four VOA and eight BNA samples had low internal standard responses.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
HOUSTON BRANCH  
10625 FALLSTONE ROAD  
HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO.	25159	SITE	Wilcox Oil
LABORATORY	AATS	NO. OF SAMPLES	20
CONTRACT#	68-D5-0022	MATRIX	Soil
SDG#	FEG02	REVIEWER (IF NOT ESD)	ESAT
SOW#	RAS SOW OLM03.2	REVIEWER'S NAME	Maria Missler
ACCT#	7FAXJN28	SF#	FAXUZZ
		COMPLETION DATE	January 10, 1997

SAMPLE NO.	FF-G02	FF-G06	FF-G10	FF-G14	FF-G18
	FF-G03	FF-G07	FF-G11	FF-G15	FF-G21
	FF-G04	FF-G08	FF-G12	FF-G16	FF-G22
	FF-G05	FF-G09	FF-G13	FF-G17	FF-G23

DATA ASSESSMENT SUMMARY

	VOA	BNA	PEST
1. HOLDING TIMES	O	M	O
2. GC/MS TUNE/INSTR. PERFORM.	O	O	O
3. CALIBRATIONS	M	O	O
4. BLANKS	O	O	M
5. SMC/SURROGATES	O	O	O
6. MATRIX SPIKE/DUPLICATE	O	O	O
7. OTHER QC	M	O	O
8. INTERNAL STANDARDS	M	M	N/A
9. COMPOUND ID/QUANTITATION	O	O	M
10. PERFORMANCE/COMPLETENESS	O	O	O
11. OVERALL ASSESSMENT	M	M	M

O = Data had no problems.

M = Data qualified because of major or minor problems.

Z = Data unacceptable.

NA = Not applicable.

**ACTION ITEMS:** BNA sample FF-G06RE was extracted 19 days past the holding time requirement. One Pest/PCB method blank had a peak that interfered with the detection of endosulfan sulfate above the CRQL on one column.

**AREA OF CONCERN:** The extraction holding time was excessive for BNA sample FF-G06RE. A contaminant in the method blank obscured the detection of endosulfan sulfate in two Pest/PCB samples. Acetone failed technical calibration criteria. Four VOA and eight BNA samples had low internal standard responses. Results were inconsistent for a pair of field duplicates. The two column quantitation results differed by more than 25 percent for three Pest/PCB samples. The data package arrived three days late.

COMMENTS/CLARIFICATIONS  
REGION 6 CLP QA REVIEW

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

<u>No.</u>	<u>Acceptable</u>	<u>Provisional</u>	<u>Unacceptable</u>
VOA	<u>14</u>	<u>6</u>	<u></u>
BNA	<u>11</u>	<u>9</u>	<u></u>
PEST	<u>16</u>	<u>4</u>	<u></u>

COMMENTS: The case consisted of 20 soil samples for complete RAS organic analysis. The OTR/COC Record designated sample FF-G02 for MS/MSD analyses and samples FF-G07/FF-G08, FF-G17/FF-G18, and FF-G22/FF-G23 as field duplicate pairs. The laboratory analyzed at low levels the VOA/BNA soil samples.

The data package contained the following contractual non-compliances.

BNA sample FF-G06RE was extracted 19 days past the contractual holding time limit. Only sample FF-G06RE is billable even though the laboratory also submitted data for the original analysis FF-G06.

The Pest/PCB method blank PBLKSC had a peak interfering with the detection of endosulfan sulfate above the CRQL on one column.

The data package arrived 3 days late for the contractual 35-day turnaround time.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 and their reanalyses had low internal standard responses. The reanalyses should be used for all except sample FF-G15.

BNA The extraction holding time for sample FF-G06RE was excessive (29 days past collection). Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had low internal standard responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated internal standard performance.

Pest/PCB An interfering contaminant in the method blank obscured the detection of endosulfan sulfate in samples FF-G15 and FF-G23.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FPG02 SITE Wilcox Oil LAB AATS

Comments (continued)

Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Some results are provisional for six VOA, nine BNA, and four Pest/PCB samples because of problems with holding time, calibration, blank contamination, field duplicate consistency, internal standard responses, and compound quantitation.

The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Tables. An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

**NOTE:** THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

1. **Holding Times:** Provisional. All samples met the contractual holding time requirement except as follows. No technical holding time criteria exist for soil samples.

BNA sample FF-G06RE was extracted 29 days after collection and receipt. In the reviewer's opinion, all results are estimated and biased low because of the excessive holding time.

2. **Tuning/Performance:** Acceptable. The BFB and DFTPP analyses met GC/MS tuning criteria. The VOA and BNA sample analyses were within 12 hours of the respective BFB/DFTPP analyses. The Pest/PCB analyses met performance guidelines.

3. **Calibrations:** Provisional. Target compounds met contractual calibration criteria. The acetone result is estimated in VOA sample FF-G17 because of a technical %D calibration deficiency.

**Pest/PCB** The reviewer was unable to reproduce the following calibration results on both analytical columns based on the raw data submitted:

the TCX and DCB initial calibration factors; and

the TCX and DCB calculated amounts in all INDAM/INDBM calibration verification analyses.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

3. Calibrations, Pest/PCB (continued)

The results reported by the laboratory differed consistently by a factor of two from the reviewer-calculated ones. The reviewer did not qualify results because the reported %RSD and %D values were not affected. However, the laboratory was contacted for clarification of this discrepancy.

4. Blanks: Provisional. The VOA and BNA method and storage blanks met contractual requirements.

**BNA** The method blanks contained phthalates below the CRQL's. In the reviewer's opinion, all "B"-flagged laboratory results should be considered as undetected (U) because the sample concentrations were less than 10X the associated blank concentrations.

**Pest/PCB** Soil method blank PBLKSC contained a peak above the CRQL that interfered with the identification of endosulfan sulfate on one column. The reviewer qualified as undetected the endosulfan sulfate results in associated samples FF-G15 and FF-G23 because of possible laboratory contamination.

In the reviewer's opinion, the following results should be used as raised quantitation limits because of the presence of the analyte in the associated method blanks (below the CRQL's) on one or both columns:

endrin aldehyde in sample FF-G12; and

γ-chlordane in sample FF-G17.

The γ-chlordane result in sample FF-G18 is biased high and "B" flagged because of possible laboratory contamination.

5. System Monitoring Compounds (SMC)/Surrogates: Acceptable. The SMC and surrogate recoveries met QC criteria except as follows.

**BNA** Sample FF-G06 had high recoveries for two base-neutral surrogates. The re-extraction had acceptable recoveries and should be used.

Samples FF-G17RE, FF-G18RE, FF-G21RE, and FF-G22RE had high recoveries for two base-neutral surrogates. No results were qualified for the high recoveries as no analytes were detected above the CRQL's in these samples.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

5. System Monitoring Compounds (SMC)/Surrogates (continued)

Pest/PCB All reported surrogate recoveries were a factor of two lower than the reviewer-calculated ones. This problem is a consequence of the incorrect calibration factors reported for the initial calibrations (see section 3). All surrogate recoveries were within QC limits based on the reviewer's calculations.

6. Matrix Spike/Matrix Spike Duplicate: Acceptable. The MS/MSD analyses met recovery and precision requirements for all fractions.

7. Other QC:

Field Duplicates: Provisional. The acetone and methylene chloride results are estimated in field duplicates FF-G17 and FF-G18 because of inconsistent concentrations (differ by a factor of two or more). Other field duplicate results were consistent.

8. Internal Standards: Provisional. The internal standard (IS) responses and retention times were within the QC limits with the following exceptions.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 were reanalyzed because of low IS responses. The reanalyses had low but improved responses for samples FF-G11, FF-G13, and FF-G22, so the reanalysis data should be used. The original analysis data should be used for sample FF-G15.

Results are estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

<u>Sample</u>	<u>IS</u>
FF-G11RE	IS3
FF-G13RE	IS1, IS3
FF-G15	IS2, IS3
FF-G22RE	IS3

BNA Sample FF-G06 had low internal standard responses, but the reanalysis had acceptable responses, and data should be used. Sample FF-G02MSD had one low IS response, but reanalysis was not required.

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

8. Internal Standards, BNA (continued)

Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had outlying IS responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated IS performance. The results designated for use are indicated on the attached data summary tables.

The reviewer qualified results as estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

<u>Sample</u>	<u>IS</u>
FF-G09	IS6
FF-G15	IS4, IS5, IS6
FF-G16	IS4, IS5, IS6
FF-G17	IS5, IS6
FF-G18	IS5, IS6
FF-G21	IS5, IS6
FF-G22	IS4, IS5, IS6
FF-G23	IS5, IS6

9. Compound Identity/Quantitation: Provisional. Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)-perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Compound identification and quantitation met contractual guidelines for the VOA and BNA samples. GC/MS confirmation was not feasible for the Pest/PCB positive results.

Pest/PCB The "P" flagged results above CRQL's are estimated in samples FF-G15, FF-G17, FF-G18, and FF-G23 because the quantitation results between the two columns differ by more than 25 percent.

10. Performance/Completeness: Acceptable. The laboratory response to the CCS request was received and should be used. The data package was complete with minor deficiencies. The laboratory was contacted for correction and resubmission (see attached FAX Record Log).

ORGANIC QA REVIEW  
CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

11. Overall Assessment: Data are acceptable for 14 VOA, 11 BNA, and 16 Pest/PCB samples.

VOA Some results are estimated for samples FF-G11RE, FF-G13RE, FF-G15, FF-G17, FF-G18, and FF-G22RE because of a calibration deficiency, inconsistent field duplicate results, and low internal standard responses.

BNA Some results are estimated for samples FF-G06RE, FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 because of a holding time problem and low internal standard responses.

Pest/PCB Some results are estimated for samples FF-G15, FF-G17, FF-G18, and FF-G23 because of blank contamination and compound quantitation deficiencies.



## ORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the Data Summary Table.

- U Not detected at reported quantitation limit.
- N Identification is tentative.
- J Estimated value.
- R Unusable.
- ^ High biased. Actual concentration may be lower than the concentration reported.
- v Low biased. Actual concentration may be higher than the concentration reported.
- F+ A false positive exists.
- F- A false negative exists.
- B This result may be high biased because of laboratory/field contamination. The reported concentration is above 5X or 10X the concentration reported in the method/field blank.
- UJ Estimated quantitation limit.
- T Identification is questionable because of absence of other commonly coexisting pesticides.
- \* Result not recommended for use because of associated QA/QC performance inferior to that from other analysis.

## ORGANIC DATA SUMMARY

Case No.: 25159 SDG: FFG02 Reviewer: M. Missler  
 Laboratory: AATS Matrix: SOIL Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G07	FF-G08
Chloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromomethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Vinyl chloride	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Methylene chloride	1 J	1 J	2 J	2 J	13 U	13 U	2 J
Acetone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Carbon disulfide	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1-Dichloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1-Dichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloroethene (total)	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chloroform	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
2-Butanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,1-Trichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Carbon tetrachloride	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromodichloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloropropane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
cis-1,3-Dichloropropene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Trichloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Dibromochloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,2-Trichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Benzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
trans-1,3-Dichloropropene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Bromoform	12 U	12 U	13 U	12 U	13 U	13 U	13 U
4-Methyl-2-pentanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
2-Hexanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Tetrachloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,2,2-Tetrachloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Toluene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Chlorobenzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Ethylbenzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Styrene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Xylenes (total)	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	18	16	21	19	22	25	23
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	1	1	1	1	1	0	0

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PPG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-G11RE	FF-G12	FF-G13	FF-G13RE
Chloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Bromomethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Vinyl chloride	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Chloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Methylene chloride	5 J	12 U	5 *	12 U	12 U	12 U *	28 J
Acetone	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Carbon disulfide	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,1-Dichloroethene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,1-Dichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,2-Dichloroethene (total)	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
Chloroform	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,2-Dichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
2-Butanone	14 U	12 U	12 U *	12 U	12 U	12 U *	12 UJv
1,1,1-Trichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Carbon tetrachloride	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Bromodichloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
1,2-Dichloropropane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
cis-1,3-Dichloropropene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Trichloroethene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Dibromochloromethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
1,1,2-Trichloroethane	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Benzene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
trans-1,3-Dichloropropene	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
Bromoform	14 U	12 U	12 U *	12 U	12 U	12 U *	12 U
4-Methyl-2-pentanone	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
2-Hexanone	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Tetrachloroethene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
1,1,2,2-Tetrachloroethane	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Toluene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Chlorobenzene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Ethylbenzene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Styrene	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Xylenes (total)	14 U	12 U	12 U *	12 UJv	12 U	12 U *	12 UJv
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	29	18	19	19	20	14	14
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	0	0	0	0	0	0	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

ORGANIC DATA SUMMARY

Case No.: 25159 SDG: FFG02 Reviewer: M. Missler  
 Laboratory: AATS Matrix: SOIL Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G17	FF-G18	FF-G21
Chloromethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Bromomethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Vinyl chloride	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Chloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Methylene chloride	12 U	2 J	11 U *	13 U	23 J	12 UG	12 U
Acetone	12 U	11 U	11 U *	13 U	48 J	12 UG	12 U
Carbon disulfide	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1-Dichloroethene	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1-Dichloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloroethene (total)	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Chloroform	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloroethane	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
2-Butanone	12 U	11 U	11 U *	13 U	12 U	12 U	12 U
1,1,1-Trichloroethane	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Carbon tetrachloride	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Bromodichloromethane	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloropropane	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
cis-1,3-Dichloropropene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Trichloroethene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Dibromochloromethane	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
1,1,2-Trichloroethane	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Benzene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
trans-1,3-Dichloropropene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Bromoform	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
4-Methyl-2-pentanone	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
2-Hexanone	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Tetrachloroethene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
1,1,2,2-Tetrachloroethane	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Toluene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Chlorobenzene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Ethylbenzene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Styrene	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
xylenes (total)	12 U	11 UUV	11 U *	13 U	12 U	12 U	12 U
Sample wt (g):	5	5	5	5	5	5	5
%Moisture:	18	13	13	24	18	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	0	0	0	0	0	0	0

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: PFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G22	FF-G22RE	FF-G23				
Chloromethane	12 U *	12 U	12 U				
Bromomethane	12 U *	12 U	12 U				
Vinyl chloride	12 U *	12 U	12 U				
Chloroethane	12 U *	12 U	12 U				
Methylene chloride	5 *	12 U	12 U				
Acetone	12 U *	12 U	12 U				
Carbon disulfide	12 U *	12 U	12 U				
1,1-Dichloroethene	12 U *	12 U	12 U				
1,1-Dichloroethane	12 U *	12 U	12 U				
1,2-Dichloroethene (total)	12 U *	12 U	12 U				
Chloroform	12 U *	12 U	12 U				
1,2-Dichloroethane	12 U *	12 U	12 U				
2-Butanone	12 U *	12 U	12 U				
1,1,1-Trichloroethane	12 U *	12 U	12 U				
Carbon tetrachloride	12 U *	12 U	12 U				
Bromodichloromethane	12 U *	12 U	12 U				
1,2-Dichloropropane	12 U *	12 U	12 U				
cis-1,3-Dichloropropene	12 U *	12 U	12 U				
Trichloroethene	12 U *	12 U	12 U				
Dibromochloromethane	12 U *	12 U	12 U				
1,1,2-Trichloroethane	12 U *	12 U	12 U				
Benzene	12 U *	12 U	12 U				
trans-1,3-Dichloropropene	12 U *	12 U	12 U				
Bromoform	12 U *	12 U	12 U				
4-Methyl-2-pentanone	12 U *	12 UJv	12 U				
2-Hexanone	12 U *	12 UJv	12 U				
Tetrachloroethene	12 U *	12 UJv	12 U				
1,1,2,2-Tetrachloroethane	12 U *	12 UJv	12 U				
Toluene	12 U *	12 UJv	12 U				
Chlorobenzene	12 U *	12 UJv	12 U				
Ethylbenzene	12 U *	12 UJv	12 U				
Styrene	12 U *	12 UJv	12 U				
Xylenes (total)	12 U *	12 UJv	12 U				
Sample wt (g):	5	5	5				
%Moisture:	18	18	18				
Dilution Factor:	1	1	1				
Level:	LOW	LOW	LOW				
Number of TIC's:	0	0	0				

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 35159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMICVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G06RE	FF-G07
Phenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
bis(2-Chloroethyl)ether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Chlorophenol	400 U	390 U	42 U	410 U	420 U *	420 UJv	440 U
1,3-Dichlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
1,4-Dichlorobenzene	400 U	390 U	29 U	410 U	420 U *	420 UJv	440 U
1,2-Dichlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,2'-Oxybis(1-chloropropane)	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
N-Nitroso-di-n-propylamine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachloroethane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Nitrobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Isophorone	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitrophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dimethylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
bis(2-Chloroethoxy)methane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dichlorophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
1,2,4-Trichlorobenzene	400 U	390 U	27 U	410 U	420 U *	420 UJv	440 U
Naphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloroaniline	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachlorobutadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloro-3-methylphenol	400 U	390 U	34 U	410 U	420 U *	420 UJv	440 U
2-Methylnaphthalene	400 U	390 U	420 U	60 U	420 U *	420 UJv	440 U
Hexachlorocyclopentadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,6-Trichlorophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,5-Trichlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
2-Chloronaphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dimethylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Acenaphthylene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,6-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
3-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Acenaphthene	400 U	390 U	32 U	22 U	420 U *	420 UJv	440 U
2,4-Dinitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4-Nitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dibenzofuran	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Diethylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chlorophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Fluorene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4,6-Dinitro-2-methylphenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
N-Nitrosodiphenylamine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Bromophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Pentachlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Phenanthrene	400 U	390 U	420 U	220 U	46 *	420 UJv	440 U
Anthracene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G06RE	FF-G07
Carbazole	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Di-n-butylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Fluoranthene	400 U	390 U	420 U	130 J	420 U *	420 UJv	440 U
Pyrene	400 U	390 U	420 U	180 J	420 U *	420 UJv	440 U
Butylbenzylphthalate	35 J	36 J	34 J	57 J	420 U *	420 UJv	45 J
3,3'-Dichlorobenzidine	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(a)anthracene	400 U	390 U	420 U	100 J	420 U *	420 UJv	440 U
Chrysene	400 U	390 U	420 U	150 J	420 U *	420 UJv	440 U
bis(2-Ethylhexyl)phthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Di-n-octylphthalate	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(b)fluoranthene	400 U	390 U	420 U	90 J	420 U *	420 UJv	440 U
Benzo(k)fluoranthene	400 U	390 U	420 U	84 J	420 U *	420 UJv	440 U
Benzo(a)pyrene	400 U	390 U	420 U	100 J	420 U *	420 UJv	440 U
Indeno(1,2,3-cd)pyrene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Dibenz(a,h)anthracene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Benzo(g,h,i)perylene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	16	21	19	22	22	25
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	10	9	9	22	20	35	33

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09RE	FF-G10	FF-G11	FF-G12	FF-G13
Phenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
bis(2-Chloroethyl)ether	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Chlorophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,3-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,4-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,2-Dichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,2'-Oxybis(1-chloropropane)	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
N-Nitroso-di-n-propylamine	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachloroethane	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Nitrobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Isophorone	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Nitrophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,4-Dimethylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
bis(2-Chloroethoxy)methane	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2,4-Dichlorophenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
1,2,4-Trichlorobenzene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Naphthalene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Chloroaniline	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachlorobutadiene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
4-Chloro-3-methylphenol	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
2-Methylnaphthalene	430 U	460 U *	460 U	400 U	410 U	410 U	380 U
Hexachlorocyclopentadiene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4,6-Trichlorophenol	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4,5-Trichlorophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
2-Chloronaphthalene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Dimethylphthalate	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Acenaphthylene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,6-Dinitrotoluene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
3-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Acenaphthene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4-Dinitrophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
4-Nitrophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Dibenzofuran	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
2,4-Dinitrotoluene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Diethylphthalate	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Chlorophenyl-phenylether	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Fluorene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Nitroaniline	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
4,6-Dinitro-2-methylphenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
N-Nitrosodiphenylamine	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
4-Bromophenyl-phenylether	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Hexachlorobenzene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Pentachlorophenol	1100 U	1200 U	1200 U *	1000 U	1000 U	1000 U	960 U
Phenanthrene	210 U	460 U	460 U *	400 U	410 U	34 U	380 U
Anthracene	430 U	460 U	460 U *	400 U	410 U	410 U	380 U

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: EFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09RE	FF-G10	FF-G11	FF-G12	FF-G13
Carbazole	46 J	460 U	460 U *	400 U	410 U	410 U	380 U
Di-n-butylphthalate	430 U	460 U	460 U *	400 U	410 U	23 J	380 U
Fluoranthene	240 J	460 U	460 U *	400 U	410 U	53 J	380 U
Pyrene	170 J	49 J	43 *	400 U	410 U	62 J	380 U
Butylbenzylphthalate	48 J	29 J	32 *	400 U	25 J	21 J	380 U
3,3'-Dichlorobenzidine	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Benzo(a)anthracene	430 U	460 U	460 U *	400 U	410 U	36 J	380 U
Chrysene	96 J	49 J	44 *	400 U	410 U	50 J	380 U
bis(2-Ethylhexyl)phthalate	430 U	460 U	460 U *	400 U	410 U	410 U	380 U
Di-n-octylphthalate	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Benzo(b)fluoranthene	430 U	31 J	29 *	400 U	410 U	42 J	380 U
Benzo(k)fluoranthene	430 U	31 J	29 *	400 U	410 U	51 J	380 U
Benzo(a)pyrene	430 U	27 J	24 *	400 U	410 U	36 J	380 U
Indeno(1,2,3-cd)pyrene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Dibenz(a,h)anthracene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Benzo(g,h,i)perylene	430 U	460 UJv	460 U *	400 U	410 U	410 U	380 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	23	29	29	18	19	20	14
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	35	33	28	21	35	25	35

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25153

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G16RE	FF-G17	FF-G17RE
Phenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
bis(2-Chloroethyl)ether	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Chlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,3-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,4-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,2-Dichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Methylphenol	400 U	380 U	380 U *	61 J	57 *	400 U *	400 U
2,2'-Oxybis(1-chloropropane)	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
4-Methylphenol	400 U	380 U	380 U *	94 J	100 *	400 U *	400 U
N-Nitroso-di-n-propylamine	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Hexachloroethane	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Nitrobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Isophorone	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Nitrophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2,4-Dimethylphenol	400 U	380 U	380 U *	360 J	380 *	400 U *	400 U
bis(2-Chloroethoxy)methane	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2,4-Dichlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
1,2,4-Trichlorobenzene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Naphthalene	400 U	81 J	380 U *	430 U	430 U *	400 U *	400 U
4-Chloroaniline	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
Hexachlorobutadiene	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
4-Chloro-3-methylphenol	400 U	380 U	380 U *	430 U	430 U *	400 U *	400 U
2-Methylnaphthalene	400 U	200 J	180 *	430 U	430 *	400 U *	400 U
Hexachlorocyclopentadiene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4,6-Trichlorophenol	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4,5-Trichlorophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
2-Chloronaphthalene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Dimethylphthalate	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Acenaphthylene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,6-Dinitrotoluene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
3-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Acenaphthene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4-Dinitrophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
4-Nitrophenol	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
Dibenzofuran	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
2,4-Dinitrotoluene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Diethylphthalate	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
4-Chlorophenyl-phenylether	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
Fluorene	400 U	380 U	380 U *	430 U	430 U *	400 U	400 U *
4-Nitroaniline	1000 U	950 U	950 U *	1100 U	1100 U *	1000 U	1000 U *
4,6-Dinitro-2-methylphenol	1000 U	950 UJv	950 U *	1100 UJv	1100 U *	1000 U	1000 U *
N-Nitrosodiphenylamine	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
4-Bromophenyl-phenylether	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
Hexachlorobenzene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
Pentachlorophenol	1000 U	950 UJv	950 U *	1100 UJv	1100 U *	1000 U	1000 U *
Phenanthrene	400 U	790 J	820 *	430 UJv	430 U *	400 U	400 U *
Anthracene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G16RE	FF-G17	FF-G17RE
Carbazole	400 U	380 UJv	380 U *	430 UJv	430 U *	400 U	400 U *
Di-n-butylphthalate	400 U	380 UJv	57 *	430 UJv	100 *	400 U	400 U *
Fluoranthene	400 U	380 UJv	110 *	430 UJv	430 U *	400 U	400 U *
Pyrene	400 U	560 J	590 *	430 UJv	430 U *	25 J	400 U *
Butylbenzylphthalate	400 U	380 UJv	380 U *	100 J	430 U *	53 J	56 *
3,3'-Dichlorobenzidine	400 U	380 UJv	380 U *	430 UJv	430 U *	400 UJv	400 U *
Benzo(a)anthracene	400 U	300 J	280 *	90 J	430 U *	400 UJv	400 U *
Chrysene	400 U	690 J	670 *	430 UJv	110 *	41 J	40 *
bis(2-Ethylhexyl)phthalate	400 U	380 UJv	380 U *	430 UJv	430 U *	400 UJv	62 *
Di-n-octylphthalate	400 U	380 UJv	380 U *	27 J	430 U *	400 UJv	400 U *
Benzo(b)fluoranthene	400 U	230 J	210 *	430 UJv	430 U *	400 UJv	400 U *
Benzo(k)fluoranthene	400 U	380 UJv	58 *	430 UJv	430 U *	400 UJv	400 U *
Benzo(a)pyrene	400 U	250 J	240 *	150 J	160 *	400 UJv	400 U *
Indeno(1,2,3-cd)pyrene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 UJv	400 U *
Dibenz(a,h)anthracene	400 U	380 UJv	380 U *	430 UJv	430 U *	400 UJv	400 U *
Benzo(g,h,i)perylene	400 U	440 J	380 U *	430 UJv	430 U *	400 UJv	400 U *
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	13	13	24	24	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	22	35	35	35	35	29	22

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G18	FF-G18RE	FF-G21	FF-G21RE	FF-G22	FF-G22RE	FF-G23
Phenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
bis(2-Chloroethyl)ether	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Chlorophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,3-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,4-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,2-Dichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,2'-Oxybis(1-chloropropane)	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
N-Nitroso-di-n-propylamine	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachloroethane	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Nitrobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Isophorone	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Nitrophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,4-Dimethylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
bis(2-Chloroethoxy)methane	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2,4-Dichlorophenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
1,2,4-Trichlorobenzene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Naphthalene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Chloroaniline	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachlorobutadiene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
4-Chloro-3-methylphenol	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
2-Methylnaphthalene	400 U *	400 U	400 U *	400 U	400 U	400 U *	400 U
Hexachlorocyclopentadiene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4,6-Trichlorophenol	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4,5-Trichlorophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
2-Chloronaphthalene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Dimethylphthalate	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Acenaphthylene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,6-Dinitrotoluene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
3-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Acenaphthene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4-Dinitrophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
4-Nitrophenol	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
Dibenzofuran	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
2,4-Dinitrotoluene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Diethylphthalate	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
4-Chlorophenyl-phenylether	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
Fluorene	400 U	400 U *	400 U	400 U *	400 U	400 U *	400 U
4-Nitroaniline	1000 U	1000 U *	1000 U	1000 U *	1000 U	1000 U *	1000 U
4,6-Dinitro-2-methylphenol	1000 U	1000 U *	1000 U	1000 U *	1000 UJv	1000 U *	1000 U
N-Nitrosodiphenylamine	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
4-Bromophenyl-phenylether	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Hexachlorobenzene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Pentachlorophenol	1000 U	1000 U *	1000 U	1000 U *	1000 UJv	1000 U *	1000 U
Phenanthrene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	35 U
Anthracene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G18	FF-G18RE	FF-G21	FF-G21RE	FF-G22	FF-G22RE	FF-G23
Carbazole	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Di-n-butylphthalate	400 U	400 U *	30 J	27 *	400 UJv	400 U *	400 U
Fluoranthene	400 U	400 U *	400 U	400 U *	400 UJv	400 U *	400 U
Pyrene	38 J	400 U *	26 J	400 U *	400 UJv	400 U *	94 J
Butylbenzylphthalate	45 J	51 *	35 J	400 U *	400 UJv	400 U *	59 J
3,3'-Dichlorobenzidine	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	400 UJv
Benzo(a)anthracene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	400 UJv
Chrysene	26 J	26 *	22 J	400 U *	400 UJv	400 U *	82 J
bis(2-Ethylhexyl)phthalate	400 UJv	83 *	400 UJv	87 *	400 UJv	400 U *	400 UJv
Di-n-octylphthalate	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	400 UJv
Benzo(b)fluoranthene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	31 J
Benzo(k)fluoranthene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	26 J
Benzo(a)pyrene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	54 J
Indeno(1,2,3-cd)pyrene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	51 J
Dibenz(a,h)anthracene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	26 J
Benzo(g,h,i)perylene	400 UJv	400 U *	400 UJv	400 U *	400 UJv	400 U *	190 J
Sample wt. (g):	30	30	30	30	30	30	30
%Moisture:	18	18	18	18	18	18	18
Dilution Factor:	1	1	1	1	1	1	1
Level:	LOW	LCW	LOW	LOW	LOW	LOW	LOW
Number of TIC's:	25	17	27	19	31	26	26

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER: FF-G23RE							
Phenol	400 U *						
bis(2-Chloroethyl)ether	400 U *						
2-Chlorophenol	400 U *						
1,3-Dichlorobenzene	400 U *						
1,4-Dichlorobenzene	400 U *						
1,2-Dichlorobenzene	400 U *						
2-Methylphenol	400 U *						
2,2'-Oxybis(1-chloropropane)	400 U *						
4-Methylphenol	400 U *						
N-Nitroso-di-n-propylamine	400 U *						
Hexachloroethane	400 U *						
Nitrobenzene	400 U *						
Isophorone	400 U *						
2-Nitrophenol	400 U *						
2,4-Dimethylphenol	400 U *						
bis(2-Chloroethoxy)methane	400 U *						
2,4-Dichlorophenol	400 U *						
1,2,4-Trichlorobenzene	400 U *						
Naphthalene	400 U *						
4-Chloroaniline	400 U *						
Hexachlorobutadiene	400 U *						
4-Chloro-3-methylphenol	400 U *						
2-Methylnaphthalene	400 U *						
Hexachlorocyclopentadiene	400 U *						
2,4,6-Trichlorophenol	400 U *						
2,4,5-Trichlorophenol	1000 U *						
2-Chloronaphthalene	400 U *						
2-Nitroaniline	1000 U *						
Dimethylphthalate	400 U *						
Acenaphthylene	400 U *						
2,6-Dinitrotoluene	400 U *						
3-Nitroaniline	1000 U *						
Acenaphthene	400 U *						
2,4-Dinitrophenol	1000 U *						
4-Nitrophenol	1000 U *						
Dibenzofuran	400 U *						
2,4-Dinitrotoluene	400 U *						
Diethylphthalate	400 U *						
4-Chlorophenyl-phenylether	400 U *						
Fluorene	400 U *						
4-Nitroaniline	1000 U *						
4,6-Dinitro-2-methylphenol	1000 U *						
N-Nitrosodiphenylamine	400 U *						
4-Bromophenyl-phenylether	400 U *						
Hexachlorobenzene	400 U *						
Pentachlorophenol	1000 U *						
Phenanthrene	35 *						
Anthracene	400 U *						



## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G23RE						
Carbazole	400 U *						
Di-n-butylphthalate	28 *						
Fluoranthene	23 *						
Pyrene	90 *						
Butylbenzylphthalate	81 *						
3,3'-Dichlorobenzidine	400 U *						
Benzo(a)anthracene	400 U *						
Chrysene	77 *						
bis(2-Ethylhexyl)phthalate	79 *						
Di-n-octylphthalate	400 U *						
Benzo(b)fluoranthene	35 *						
Benzo(k)fluoranthene	41 *						
Benzo(a)pyrene	60 *						
Indeno(1,2,3-cd)pyrene	29 *						
Dibenz(a,h)anthracene	400 U *						
Benzo(g,h,i)perylene	110 *						
Sample wt (g):	30						
%Moisture:	18						
Dilution Factor:	1						
Level:	LOW						
Number of TIC's:	35						

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G07	FF-G08
alpha-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
beta-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
delta-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
gamma-BHC (lindane)	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Heptachlor	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Aldrin	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Heptachlor epoxide	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Endosulfan I	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Dieldrin	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDE	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endrin	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endosulfan II	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDD	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endosulfan sulfate	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
4,4'-DDT	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Methoxychlor	21 U	20 U	22 U	21 U	22 U	23 U	22 U
Endrin ketone	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
Endrin aldehyde	4.0 U	3.9 U	4.2 U	4.1 U	4.2 U	4.4 U	4.3 U
alpha-Chlordane	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
gamma-Chlordane	2.1 U	2.0 U	2.2 U	2.1 U	2.2 U	2.3 U	2.2 U
Toxaphene	210 U	200 U	220 U	210 U	220 U	230 U	220 U
Aroclor-1016	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1221	82 U	80 U	85 U	83 U	86 U	89 U	87 U
Aroclor-1232	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1242	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1248	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1254	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Aroclor-1260	40 U	39 U	42 U	41 U	42 U	44 U	43 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	18	16	21	19	22	25	23
Dilution Factor:	1	1	1	1	1	1	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-G12	FF-G13	FF-G14	FF-G15
alpha-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
beta-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
delta-BHC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
gamma-BHC (lindane)	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Heptachlor	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.5	2.0 U
Aldrin	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Heptachlor epoxide	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Endosulfan I	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
Dieldrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
4,4'-DDE	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
Endrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	7.5 J
Endosulfan II	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	7.9
4,4'-DDD	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
Endosulfan sulfate	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	10 UJ
4,4'-DDT	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
Methoxychlor	24 U	21 U	21 U	21 U	20 U	21 U	20 U
Endrin ketone	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	14 J
Endrin aldehyde	4.6 U	4.0 U	4.1 U	4.7 U	3.8 U	4.0 U	3.8 U
alpha-Chlordane	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	3.6 J
gamma-Chlordane	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	5.7
Toxaphene	240 U	210 U	210 U	210 U	290 U	210 U	200 U
Aroclor-1016	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1221	94 U	82 U	83 U	84 U	78 U	82 U	77 U
Aroclor-1232	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1242	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1248	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1254	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1260	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Sample wt (g):	30	30	30	30	30	30	30
%Moisture:	29	18	19	20	14	18	13
Dilution Factor:	1	1	1	1	1	1	1

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## ORGANIC DATA SUMMARY

Case No.: 25159

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G16	FF-G17	FF-G18	FF-G21	FF-G22	FF-G23	
alpha-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
beta-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
delta-BHC	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
gamma-BHC (lindane)	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Heptachlor	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Aldrin	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Heptachlor epoxide	2.2 U	2.1	2.9	2.1 U	2.1 U	2.1 U	
Endosulfan I	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Dieldrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
4,4'-DDE	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endosulfan II	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
4,4'-DDD	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endosulfan sulfate	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	5.6 UJ	
4,4'-DDT	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Methoxychlor	22 U	21 U	21 U	21 U	21 U	21 U	
Endrin ketone	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endrin aldehyde	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
alpha-Chlordane	2.2 U	2.2 U	3.6 U	2.1 U	2.1 U	2.1 U	
gamma-Chlordane	2.2 U	2.8 UJ	5.9 B	2.1 U	2.1 U	2.1 U	
Toxaphene	220 U	210 U	210 U	210 U	210 U	210 U	
Aroclor-1016	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1221	88 U	82 U	82 U	82 U	82 U	82 U	
Aroclor-1232	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1242	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1248	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1254	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1260	43 U	40 U	40 U	40 U	40 U	40 U	
Sample wt (g):	30	30	30	30	30	30	
%Moisture:	24	18	18	18	18	18	
Dilution Factor:	1	1	1	1	1	1	

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

## INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 25159 SDG No. FFG02 SDG Nos. To Follow \_\_\_\_\_ SAS No. \_\_\_\_\_ Date Rec 12/27/96

EPA Lab ID:	AATS	ORIGINALS	YES	NO	N/A
Lab Location:	Broken Arrow, OK 74012	CUSTODY SEALS			
Region:	6 Audit No.: 25159/FFG02	1. Present on package?	X		
Re_Submitted CSF?	Yes No X	2. Intact upon receipt?	X		
Box No(s):	1	FORM DC-2			
COMMENTS:		3. Numbering scheme accurate?		X	
3	The reviewer clarified the numbering scheme as follows: SDG narrative was pages 1-35B; SDG cover sheet/TR were pages 35C-38; Forms VIII VOA were pages 362-367; and VOA standards data were pages 178-361.	4. Are enclosed documents listed?	X		
		5. Are listed documents enclosed?	X		
		FORM DC-1			
		6. Present?	X		
		7. Complete?	X		
		8. Accurate?	X		
13	No airbills were available as the samples were delivered in person.	CHAIN-OF-CUSTODY RECORD(s)			
		9. Signed?	X		
		10. Dated?	X		
		TRAFFIC REPORT(s) PACKING LIST(s)			
		11. Signed?	X		
		12. Dated?	X		
		AIRBILLS/AIRBILL STICKER			
		13. Present?			X
		14. Signed?			X
		15. Dated?			X
		SAMPLE TAGS			
		16. Does DC-1 list tags as being included?	X		
		17. Present?	X		
		OTHER DOCUMENTS			
		18. Complete?	X		
		19. Legible?	X		
		20. Original?		X	
		20a.If "NO", does the copy indicate where original documents are located?	X		

Over for additional comments.

Audited by: Marisa Mysser  
Audited by: \_\_\_\_\_  
Audited by: \_\_\_\_\_  
Signature

Maria Missler / ESAT Data Reviewer

Date 1/2/97  
Date \_\_\_\_\_  
Date \_\_\_\_\_

<b><u>TO BE COMPLETED BY CEAT</u></b>		
Date Recvd by CEAT: _____	Date Entered: _____	Date Reviewed: _____
Entered by: _____	_____	_____
Reviewed by: _____	_____	_____
Signature		Printed Name/Title

In Reference to Case No(s):  
25159 SDG: FFG02 (O-1780)

Contract Laboratory Program  
REGIONAL/LABORATORY COMMUNICATION SYSTEM  
FAX Record Log

Date of FAX: January 10, 1997  
Laboratory Name: AATS  
Lab Contact: Harry Borg

Region: 6  
Regional Contact: Maria Missler - ESAT

FAX initiated by: Laboratory X Region

In reference to data for the following fractions:

BNA Pest/PCB

Summary of Questions/Issues:

A. BNA

1. Sample FF-G11, Form I SV-TIC: The TIC's at 22.326 and 22.595 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
2. Sample FF-G17RE, Form I SV-TIC: The TIC's at 12.764 and 13.089 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
3. Sample FF-G16: On the quantitation report, the peak identified as benzo(a)anthracene better matches the retention time identification criteria for chrysene. Please correct and resubmit the quantitation and results reports.
4. The following peaks appear to meet the TIC intensity criteria but were not reported. Please revise Forms I SV-TIC to include these peaks or explain:

<u>Sample</u>	<u>Approximate peak RT (min)</u>
FF-G03	11.4, 12.0
FF-G04	4.95, 11.7, 12.2
FF-G07	4.4
FF-G10	7.6

5. Form V SV, page 464: According to the analysis log (page 2682), the sample analyzed on 12/12/96 at 0029 was identified as "FF-G01", not FF-G06 as reported on this form. Please clarify this discrepancy.

FAX COMMUNICATION LOG

Continuation Page 2  
Laboratory/Contact AATS / Harry Borg  
In Reference To Case No. 25159 SDG: FFG02

B. Pest/PCB

1. Forms VI PEST-2, pages 2327, 2328, 2329, and 2330: The reviewer was unable to reproduce the calibration factors reported for the two surrogates based on the raw data (pages 2396-2409 and 2449-2462). Please correct and resubmit these forms to match the raw data or demonstrate your calculations.
2. Method blank PBLKSC, page 2490: According to the SOW (OLM03.0, D-73/PEST, 12.1.2.4) the method blank acceptance criteria apply independently to each analytical column. The integration report (page 2490) shows the presence of endosulfan sulfate on column DB-17 above the CRQL. Please comment on this non-compliance.

**NOTE:** Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM03.0, p. B-29), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 7 days to:

Mr. Mahmoud El-Feky  
U.S. EPA Region 6 Laboratory  
10625 Fallstone Road  
Houston, TX 77099

If you have any questions, please contact me at (713) 988-2995.

Mario Kiss/er  
Signature

January 10, 1997  
Date

Distribution: (1) Lab Copy (2) Region Copy



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG16

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10137.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 9.4

Number TICs found: 35

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.700	670	J
2.	UNKNOWN PAH	22.117	480	J
3.	UNKNOWN	22.425	220	J
4.	UNKNOWN	22.604	380	J
5.	UNKNOWN	22.861	240	J
6.				
7.				
8.				
9.				
10.				
11.				
12.				
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16.				
17.				
18.				
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20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG16RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10196.D

Level: (low/med) LOW

Date Received: 11/19/96 <sup>18</sup> 12/24/96

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

108-95-2-----	Phenol	430	U
111-44-4-----	bis(2-Chloroethyl) Ether	430	U
95-57-8-----	2-Chlorophenol	430	U
541-73-1-----	1,3-Dichlorobenzene	430	U
106-46-7-----	1,4-Dichlorobenzene	430	U
95-50-1-----	1,2-Dichlorobenzene	430	U
95-48-7-----	2-Methylphenol	57	J
108-60-1-----	2,2'-oxybis(1-Chloropropane)	430	U
106-44-5-----	4-Methylphenol	100	J
621-64-7-----	N-Nitroso-di-n-propylamine	430	U
67-72-1-----	Hexachloroethane	430	U
98-95-3-----	Nitrobenzene	430	U
78-59-1-----	Isophorone	430	U
88-75-5-----	2-Nitrophenol	430	U
105-67-9-----	2,4-Dimethylphenol	380	J
111-91-1-----	bis(2-Chloroethoxy) methane	430	U
120-83-2-----	2,4-Dichlorophenol	430	U
120-82-1-----	1,2,4-Trichlorobenzene	430	U
91-20-3-----	Naphthalene	430	U
106-47-8-----	4-Chloroaniline	430	U
87-68-3-----	Hexachlorobutadiene	430	U
59-50-7-----	4-Chloro-3-Methylphenol	430	U
91-57-6-----	2-Methylnaphthalene	430	U
77-47-4-----	Hexachlorocyclopentadiene	430	U
88-06-2-----	2,4,6-Trichlorophenol	430	U
95-95-4-----	2,4,5-Trichlorophenol	1100	U
91-58-7-----	2-Chloronaphthalene	430	U
88-74-4-----	2-Nitroaniline	1100	U
131-11-3-----	Dimethylphthalate	430	U
208-96-8-----	Acenaphthylene	430	U
606-20-2-----	2,6-Dinitrotoluene	430	U
99-09-2-----	3-Nitroaniline	1100	U
83-32-9-----	Acenaphthene	430	U

FORM I SV-1

OLM03.0

1353

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG16RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10196.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

51-28-5-----	2,4-Dinitrophenol	1100	U
100-02-7-----	4-Nitrophenol	1100	U
132-64-9-----	Dibenzofuran	430	U
121-14-2-----	2,4-Dinitrotoluene	430	U
84-66-2-----	Diethylphthalate	430	U
7005-72-3-----	4-Chlorophenyl-phenylether	430	U
86-73-7-----	Fluorene	430	U
100-01-6-----	4-Nitroaniline	1100	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1100	U
86-30-6-----	N-Nitrosodiphenylamine (1)	430	U
101-55-3-----	4-Bromophenyl-phenylether	430	U
118-74-1-----	Hexachlorobenzene	430	U
87-86-5-----	Pentachlorophenol	1100	U
85-01-8-----	Phenanthrene	430	U
120-12-7-----	Anthracene	430	U
86-74-8-----	Carbazole	430	U
84-74-2-----	Di-n-butylphthalate	100	JB
206-44-0-----	Fluoranthene	430	U
129-00-0-----	Pyrene	430	U
85-68-7-----	Butylbenzylphthalate	430	U
91-94-1-----	3,3'-Dichlorobenzidine	430	U
56-55-3-----	Benzo(a)anthracene	430	U
218-01-9-----	Chrysene	110	J
117-81-7-----	bis(2-Ethylhexyl)phthalate	430	U
117-84-0-----	Di-n-octylphthalate	430	U
205-99-2-----	Benzo(b)fluoranthene	430	U
207-08-9-----	Benzo(k)fluoranthene	430	U
50-32-8-----	Benzo(a)pyrene	160	J
193-39-5-----	Indeno(1,2,3-cd)pyrene	430	U
53-70-3-----	Dibenz(a,h)anthracene	430	U
191-24-2-----	Benzo(g,h,i)perylene	430	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1354

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG16RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10196.D

Level: (low/med) LOW

Date Received: 11/18/96

12/24/96

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 9.4

Number TICs found: 35

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ORGANIC ACID	3.104	1500	J
2.	UNKNOWN	3.154	130	J
3.	UNKNOWN	3.478	530	JB
4.	UNKNOWN	3.666	360	JB
5.	UNKNOWN	3.803	550	J
6. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.981	2200	NJAB
7.	UNKNOWN	4.060	380	JB
8.	UNKNOWN	4.168	110	J
9.	UNKNOWN	4.247	210	J
10.	UNKNOWN	4.709	270	J
11.	UNKNOWN	4.926	170	J
12.	(5H)-Furanone, -dimethyl-	5.143	130	J
13.	-Hexen--one, -methyl-	5.261	140	J
14.	UNKNOWN	7.180	180	J
15.	Phenol, -ethyl-	7.732	100	J
16.	UNKNOWN	14.630	260	J
17.	UNKNOWN	15.273	320	J
18.	UNKNOWN	15.590	300	J
19.	UNKNOWN	15.977	240	JB
20.	Phenol, -(1-methylethyliden	16.414	500	J
21.	UNKNOWN	16.821	650	J
22.	UNKNOWN	17.288	550	J
23.	UNKNOWN	18.251	510	J
24.	UNKNOWN	19.720	290	J
25.	UNKNOWN	19.909	250	J
26.	UNKNOWN	20.087	760	J
27.	UNKNOWN	20.167	280	J
28.	UNKNOWN	20.296	450	J
29.	UNKNOWN	20.603	360	J
30.	UNKNOWN	20.951	460	J

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG17

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10294.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl)Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy)methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG17

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10294.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	400	U
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	25	J
85-68-7-----	Butylbenzylphthalate	53	J
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	41	J
117-81-7-----	bis(2-Ethylhexyl)phthalate	65	JB
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1405

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG17

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10294.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 6.4

Number TICs found: 29

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKENE	3.351	100	J
2.	UNKNOWN	3.657	160	J
3. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.825	910	NJAB
4.	UNKNOWN	3.913	120	J
5.	UNKNOWN	3.943	150	J
6.	UNKNOWN	3.973	140	J
7.	UNKNOWN	4.535	110	J
8.	UNKNOWN	4.742	680	J
9.	UNKNOWN	4.959	250	JB
10.	UNKNOWN	5.078	130	JB
11.	UNKNOWN	6.114	160	J
12.	UNKNOWN	6.183	410	J
13.	UNKNOWN	7.583	120	J
14. 0-00-0	Linalyl propanoate	7.850	86	NJ
15. 13049-35-9	1,1'-Biphenyl, 2,2'-diethyl-	12.810	410	NJ
16.	UNKNOWN PAH	13.136	220	J
17.	UNKNOWN ORGANIC ACID	14.391	150	J
18.	UNKNOWN ORGANIC ACID	14.460	640	J
19. 57-10-3	Hexadecanoic acid	14.520	440	NJ
20. 112-80-1	Oleic Acid	15.756	510	NJ
21. 57-11-4	Octadecanoic acid	15.845	92	NJ
22.	UNKNOWN ORGANIC ACID	17.826	440	J
23.	-Tridecatrienitrile, -trim	19.613	520	J
24.	UNKNOWN	21.331	370	J
25.	UNKNOWN	21.967	760	J
26.	-Naphthoquinone, -ethyl--dih	22.066	650	J
27.	UNKNOWN PAH	22.096	880	J
28. 83-47-6	.gamma.-Sitosterol	22.255	1100	NJ
29.	UNKNOWN	22.742	380	J
30.				

✓



1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG17RE

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.07RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10327.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl) Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy) methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ab Name: SWL-TULSA

Contract: 68-D5-0022

FFG17RE

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.07RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10327.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	400	U
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	400	U
85-68-7-----	Butylbenzylphthalate	56	J
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	40	J
117-81-7-----	bis(2-Ethylhexyl)phthalate	62	JB
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG17RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.07RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10327.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 6.4

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

Number TICs found: 22

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.627	94	J
2. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.785	830	NJAB
3.	UNKNOWN ALCOHOL	3.873	110	J
4.	UNKNOWN	4.505	93	J
5.	UNKNOWN	4.712	680	J
6.	UNKNOWN	4.929	220	JB
7.	UNKNOWN	5.047	150	JB
8.	UNKNOWN	6.083	140	J
9.	UNKNOWN	6.142	280	J
10.	UNKNOWN	7.541	120	J
11. 13049-35-9	1,1'-Biphenyl, 2,2'-diethyl-	12.764	400	NJ
12. 13049-35-9	1,1'-Biphenyl, 2,2'-diethyl-	13.089	230	NJ
13.	UNKNOWN ORGANIC ACID	14.341	130	J
14.	UNKNOWN ORGANIC ACID	14.421	520	J
15.	UNKNOWN ORGANIC ACID	14.480	370	J
16.	UNKNOWN ORGANIC ACID	15.713	430	J
17.	-Dodecatrien--ol, -trimethy	19.567	750	JB
18.	UNKNOWN	21.148	410	J
19.	UNKNOWN PAH	21.909	670	J
20.	UNKNOWN	21.998	720	J
21.	UNKNOWN	22.028	1000	J
22.	UNKNOWN	22.216	800	J
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG18

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.08

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10295.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl) Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy)methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG18

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.08

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10295.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	400	U
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	✓38	J
85-68-7-----	Butylbenzylphthalate	45	J
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	26	J
117-81-7-----	bis(2-Ethylhexyl)phthalate	✓80	JB
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1502

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG18

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.08

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10295.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 6.4

Number TICs found: 25

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.657	100	J
2. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.814	780	NJAB
3.	UNKNOWN	3.903	100	J
4.	UNKNOWN	3.943	110	J
5.	UNKNOWN	4.742	530	J
6.	UNKNOWN	4.959	290	JB
7.	UNKNOWN	5.077	140	JB
8.	UNKNOWN	6.113	150	J
9.	UNKNOWN	6.182	320	J
10.	UNKNOWN	7.582	120	J
11.	UNKNOWN ORGANIC ACID	14.387	160	J
12.	UNKNOWN ORGANIC ACID	14.466	670	J
13.	UNKNOWN ORGANIC ACID	14.526	540	J
14. 112-80-1	Oleic Acid	15.751	540	NJ
15.	UNKNOWN ORGANIC ACID	15.841	280	J
16.	-Tridecatrienitrile, -trim	19.613	480	J
17.	UNKNOWN	21.198	340	J
18.	UNKNOWN	21.972	780	J
19.	UNKNOWN PAH	22.061	560	J
20.	UNKNOWN PAH	22.091	1400	J
21.	UNKNOWN	22.260	440	J
22.	UNKNOWN	22.280	460	J
23.	UNKNOWN	22.647	310	J
24.	UNKNOWN	22.865	410	J
25.	UNKNOWN	22.964	320	J
26.				
27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG18RE

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.08RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10328.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl) Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy) methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1550



1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG18RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.08RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10328.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	400	U
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	400	U
85-68-7-----	Butylbenzylphthalate	51	J
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	26	J
117-81-7-----	bis(2-Ethylhexyl)phthalate	83	JB
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG18RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.08RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10328.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

Number TICs found: 17

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.784	700	NJAB
2.	UNKNOWN	4.711	520	J
3.	UNKNOWN	4.928	250	JB
4.	UNKNOWN	5.047	160	JB
5.	UNKNOWN	6.082	140	J
6.	UNKNOWN	6.142	210	J
7.	UNKNOWN	7.541	120	J
8.	UNKNOWN	14.350	130	J
9. 2091-29-4	9-Hexadecenoic acid	14.429	600	NJ
10. 57-10-3	Hexadecanoic acid	14.489	460	NJ
11.	UNKNOWN ORGANIC ACID	15.712	460	J
12.	UNKNOWN ORGANIC ACID	15.801	210	J
13.	-Dodecatrien--ol, -trimethy	19.566	750	JB
14.	UNKNOWN PAH	21.908	590	J
15.	UNKNOWN PAH	21.997	930	J
16.	UNKNOWN	22.026	700	J
17.	UNKNOWN	22.214	590	J
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG21

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10296.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl) Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy) methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG21

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10296.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	30	J
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	26	J
85-68-7-----	Butylbenzylphthalate	35	J
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	22	J
117-81-7-----	bis(2-Ethylhexyl)phthalate	✓ 67	JB
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG21

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10296.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 6.4

Number TICs found: 27

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.657	160	J
2. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.815	860	NJAB
3.	UNKNOWN	3.913	140	J
4.	UNKNOWN	3.943	150	J
5.	UNKNOWN	4.535	91	J
6.	UNKNOWN	4.604	88	J
7.	-Hydroxy--oxohexanoic acid 1	4.742	790	J
8.	UNKNOWN	4.959	320	JB
9.	UNKNOWN	5.078	130	JB
10.	UNKNOWN	6.104	120	J
11.	UNKNOWN	6.183	280	J
12.	UNKNOWN	7.583	160	J
13.	-Cyclohexene--methanol,	7.849	82	J
14.	UNKNOWN ORGANIC ACID	14.399	200	J
15.	UNKNOWN ORGANIC ACID	14.478	890	J
16. 57-10-3	Hexadecanoic acid	14.528	600	NJ
17.	UNKNOWN ORGANIC ACID	15.734	400	J
18. 112-80-1	Oleic Acid	15.764	410	NJ
19. 57-11-4	Octadecanoic acid	15.853	350	NJ
20. 57-88-5	Cholesterol	21.332	330	NJ
21.	UNKNOWN	21.828	290	J
22.	UNKNOWN	21.977	420	J
23.	UNKNOWN PAH	22.066	300	J
24.	UNKNOWN	22.096	450	J
25.	UNKNOWN	22.652	400	J
26.	UNKNOWN	22.871	330	J
27.	Androst--en--one, -hydroxy-,	22.970	310	J
28.				
29.				
30.				

✓

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG21RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.09RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10329.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl)Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy)methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1642

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG21RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.09RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10329.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	27	J
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	400	U
85-68-7-----	Butylbenzylphthalate	400	U
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	400	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	87	JB
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG21RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.09RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10329.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

Number TICs found: 19

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.627	120	J
2. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.785	760	NJAB
3.	UNKNOWN ALCOHOL	3.883	110	J
4.	UNKNOWN	3.913	110	J
5.	-Hydroxy--oxohexanoic acid 1	4.712	730	J
6.	UNKNOWN	4.929	270	JB
7.	UNKNOWN	5.047	140	JB
8.	UNKNOWN	6.073	110	J
9.	UNKNOWN	6.142	170	J
10.	UNKNOWN	7.541	150	J
11.	UNKNOWN	14.350	150	J
12.	UNKNOWN ORGANIC ACID	14.429	760	J
13.	UNKNOWN ORGANIC ACID	14.489	500	J
14.	UNKNOWN ORGANIC ACID	15.682	300	J
15.	UNKNOWN ORGANIC ACID	15.712	310	J
16.	UNKNOWN ORGANIC ACID	15.801	270	J
17.	-Dodecatrien--ol, -trimethy	19.561	490	JB
18.	UNKNOWN	21.989	370	J
19.	UNKNOWN	22.029	380	J
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

v

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG22

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10138.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl)Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy)methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG22

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10138.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	400	U
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	400	U
85-68-7-----	Butylbenzylphthalate	400	U
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	400	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	400	U
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1683

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG22

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10138.D

Level: (low/med) LOW

Date Received: 11/19/96 <sup>18</sup> 12/24/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

Number TICs found: 31

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.281	420	J
2.	UNKNOWN	3.655	600	JB
3.	UNKNOWN	3.852	180	J
4.	UNKNOWN	3.990	360	JB
5.	UNKNOWN	4.059	180	JB
6.	20818-81-9 Propanal, 2-hydroxy-2-methyl	4.158	1900	NJA
7.	UNKNOWN	4.236	260	J
8.	UNKNOWN	4.286	90	J
9.	UNKNOWN	4.443	330	J
10.	UNKNOWN	4.926	180	J
11.	-Hexen--one, -methyl-	5.359	140	J
12.	UNKNOWN	14.913	100	J
13.	UNKNOWN	18.311	320	J
14.	UNKNOWN	18.478	300	J
15.	UNKNOWN	20.106	180	J
16.	UNKNOWN	20.204	240	J
17.	UNKNOWN	20.362	210	J
18.	UNKNOWN	20.787	210	J
19.	UNKNOWN	21.211	220	J
20.	UNKNOWN	21.557	360	J
21.	UNKNOWN	22.189	270	J
22.	UNKNOWN	22.407	180	J
23.	UNKNOWN	22.555	490	J
24.	UNKNOWN	22.663	580	J
25.	UNKNOWN	22.703	780	J
26.	UNKNOWN	22.920	480	J
27.	UNKNOWN	23.147	180	J
28.	UNKNOWN	23.296	380	J
29.	UNKNOWN	23.552	1000	J
30.	UNKNOWN	23.641	330	J

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG22

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10138.D

Level: (low/med) LOW

Date Received: 11/18/96 <sup>18</sup> 12/24/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 8.8

Number TICs found: 31

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.924	180	J
2.				
3.				
4.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG22RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10197.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl) Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy) methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG22RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10197.D

Level: (low/med) LOW

Date Received: 11/19/96 <sup>18</sup> <sub>12/24/96</sub> <sup>dt</sup>

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	400	U
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	400	U
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	400	U
85-68-7-----	Butylbenzylphthalate	400	U
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	400	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	400	U
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	400	U
207-08-9-----	Benzo(k)fluoranthene	400	U
50-32-8-----	Benzo(a)pyrene	400	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	400	U
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG22RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10197.D

Level: (low/med) LOW

Date Received: 11/19/96 *12/21/96*

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

Number TICs found: 26

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.095	290	J
2.	UNKNOWN	3.478	470	JB
3.	UNKNOWN	3.665	190	JB
4.	UNKNOWN	3.803	320	J
5. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.971	1700	NJAB
6.	UNKNOWN	4.049	210	JB
7.	UNKNOWN	4.167	96	J
8.	UNKNOWN	4.246	190	J
9.	UNKNOWN	4.709	180	J
10.	UNKNOWN	4.925	120	J
11.	UNKNOWN	5.142	120	JB
12.	UNKNOWN	6.392	83	J
13.	UNKNOWN	14.666	160	J
14.	UNKNOWN	14.726	130	J
15.	Unknown	16.409	510	J
16.	Unknown	18.201	410	J
17.	UNKNOWN	20.103	490	J
18.	UNKNOWN	21.030	760	J
19.	UNKNOWN	21.474	390	J
20.	UNKNOWN	22.253	470	J
21.	UNKNOWN	22.342	820	J
22.	UNKNOWN	22.382	1100	J
23.	UNKNOWN	22.589	750	J
24.	UNKNOWN	22.825	440	J
25.	UNKNOWN	23.190	1500	J
26.	UNKNOWN	23.289	460	J
27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG23

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.11

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10220.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/08/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

Q

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl)Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy)methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1760

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG23

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10220.D

Level: (low/med) LOW Date Received: 11/19/96 *12/24/96*

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/08/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	35	J
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	29	JB
206-44-0-----	Fluoranthene	400	U
129-00-0-----	Pyrene	94	J
85-68-7-----	Butylbenzylphthalate	59	J
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	82	J
117-81-7-----	bis(2-Ethylhexyl)phthalate	62	JB
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	31	J
207-08-9-----	Benzo(k)fluoranthene	26	J
50-32-8-----	Benzo(a)pyrene	54	J
193-39-5-----	Indeno(1,2,3-cd)pyrene	51	J
53-70-3-----	Dibenz(a,h)anthracene	26	J
191-24-2-----	Benzo(g,h,i)perylene	190	J

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1761

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG23

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.11

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10220.D

Level: (low/med) LOW

Date Received: 11/19/96 12/24/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/08/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 8.6

Number TICs found: 26

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 115-19-5	3-Butyn-2-ol, 2-methyl-	3.421	1000	NJ
2.	UNKNOWN	3.598	220	JB
3.	-Pentene, -methyl-	3.737	800	J
4. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.905	2100	NJAB
5.	UNKNOWN AMIDE	3.983	490	J
6. 694-87-1	Bicyclo[4.2.0]octa-1,3,5-tri	4.418	160	NJ
7.	UNKNOWN	4.615	450	J
8. 110-13-4	2,5-Hexanedione	4.793	130	NJ
9.	UNKNOWN	4.823	270	J
10.	UNKNOWN	5.040	170	JB
11.	UNKNOWN	6.274	84	J
12.	UNKNOWN	6.520	85	J
13.	UNKNOWN	14.473	140	J
14.	-Pentadecenoic acid	14.543	220	J
15. 57-10-3	Hexadecanoic acid	14.593	230	NJ
16.	Pyrene, -methyl-	16.876	96	J
17.	Pyrene, -methyl-	17.038	180	J
18.	Benzaldehyde, -benzyloxy--fl	17.937	910	J
19.	UNKNOWN	18.768	300	J
20.	UNKNOWN	20.807	320	J
21.	UNKNOWN	22.186	530	J
22.	UNKNOWN	22.216	980	J
23.	Urs--ene, -methoxy-, (.beta.	22.419	590	J
24.	UNKNOWN	22.784	430	J
25.	UNKNOWN	23.007	1200	J
26.	Stigmast--en--one	23.108	580	J
27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG23RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.11RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10260.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

108-95-2-----	Phenol	400	U
111-44-4-----	bis(2-Chloroethyl) Ether	400	U
95-57-8-----	2-Chlorophenol	400	U
541-73-1-----	1,3-Dichlorobenzene	400	U
106-46-7-----	1,4-Dichlorobenzene	400	U
95-50-1-----	1,2-Dichlorobenzene	400	U
95-48-7-----	2-Methylphenol	400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5-----	4-Methylphenol	400	U
621-64-7-----	N-Nitroso-di-n-propylamine	400	U
67-72-1-----	Hexachloroethane	400	U
98-95-3-----	Nitrobenzene	400	U
78-59-1-----	Isophorone	400	U
88-75-5-----	2-Nitrophenol	400	U
105-67-9-----	2,4-Dimethylphenol	400	U
111-91-1-----	bis(2-Chloroethoxy) methane	400	U
120-83-2-----	2,4-Dichlorophenol	400	U
120-82-1-----	1,2,4-Trichlorobenzene	400	U
91-20-3-----	Naphthalene	400	U
106-47-8-----	4-Chloroaniline	400	U
87-68-3-----	Hexachlorobutadiene	400	U
59-50-7-----	4-Chloro-3-Methylphenol	400	U
91-57-6-----	2-Methylnaphthalene	400	U
77-47-4-----	Hexachlorocyclopentadiene	400	U
88-06-2-----	2,4,6-Trichlorophenol	400	U
95-95-4-----	2,4,5-Trichlorophenol	1000	U
91-58-7-----	2-Chloronaphthalene	400	U
88-74-4-----	2-Nitroaniline	1000	U
131-11-3-----	Dimethylphthalate	400	U
208-96-8-----	Acenaphthylene	400	U
606-20-2-----	2,6-Dinitrotoluene	400	U
99-09-2-----	3-Nitroaniline	1000	U
83-32-9-----	Acenaphthene	400	U

FORM I SV-1

OLM03.0

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FFG23RE

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.11RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10260.D

Level: (low/med) LOW Date Received: 11/19/96 <sup>18</sup>pt 12/4/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/09/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5-----	2,4-Dinitrophenol	1000	U
100-02-7-----	4-Nitrophenol	1000	U
132-64-9-----	Dibenzofuran	400	U
121-14-2-----	2,4-Dinitrotoluene	400	U
84-66-2-----	Diethylphthalate	400	U
7005-72-3-----	4-Chlorophenyl-phenylether	400	U
86-73-7-----	Fluorene	400	U
100-01-6-----	4-Nitroaniline	1000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	400	U
101-55-3-----	4-Bromophenyl-phenylether	400	U
118-74-1-----	Hexachlorobenzene	400	U
87-86-5-----	Pentachlorophenol	1000	U
85-01-8-----	Phenanthrene	35	J
120-12-7-----	Anthracene	400	U
86-74-8-----	Carbazole	400	U
84-74-2-----	Di-n-butylphthalate	28	JB
206-44-0-----	Fluoranthene	23	J
129-00-0-----	Pyrene	90	J
85-68-7-----	Butylbenzylphthalate	81	J
91-94-1-----	3,3'-Dichlorobenzidine	400	U
56-55-3-----	Benzo(a)anthracene	400	U
218-01-9-----	Chrysene	77	J
117-81-7-----	bis(2-Ethylhexyl)phthalate	79	JB
117-84-0-----	Di-n-octylphthalate	400	U
205-99-2-----	Benzo(b)fluoranthene	35	J
207-08-9-----	Benzo(k)fluoranthene	41	J
50-32-8-----	Benzo(a)pyrene	60	J
193-39-5-----	Indeno(1,2,3-cd)pyrene	29	J
53-70-3-----	Dibenz(a,h)anthracene	400	U
191-24-2-----	Benzo(g,h,i)perylene	110	J

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1819

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG23RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.11RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10260.D

Level: (low/med) LOW

Date Received: 11/19/96 <sup>13</sup> <sup>dt</sup> 12/24/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 8.6

Number TICs found: 35

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.371	600	J
2.	-Buten--ol, -dimethyl-	3.559	180	J
3.	UNKNOWN	3.687	450	J
4. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.865	2300	NJAB
5. 5076-20-0	Oxirane, tetramethyl-	3.944	450	NJ
6.	UNKNOWN	4.566	190	J
7.	UNKNOWN	4.774	340	J
8.	(5H)-Furanone, -dimethyl-	5.001	160	J
9.	-Penten--one, -dimethyl-	5.129	94	J
10.	UNKNOWN	6.472	97	J
11.	UNKNOWN ORGANIC ACID	11.816	86	J
12. 109-29-5	Oxacycloheptadecan-2-one	14.505	340	NJ
13. 57-10-3	Hexadecanoic acid	14.566	300	NJ
14.	UNKNOWN	15.431	84	J
15.	-Octadecadienal, ()-	15.784	210	J
16.	UNKNOWN ORGANIC ACID	15.814	190	J
17. 57-11-4	Octadecanoic acid	15.905	180	NJ
18.	UNKNOWN PAH	16.208	200	J
19.	Pyrene, -methyl-	16.834	220	J
20.	Pyrene, -methyl-	16.996	460	J
21.	Pyrene, -dimethyl-	17.726	190	J
22.	UNKNOWN	17.888	520	J
23. 84-15-1	o-Terphenyl	17.939	220	NJ
24.	UNKNOWN	18.365	160	J
25.	(-Tetramethylhexadeca-1,	19.677	260	J
26.	UNKNOWN	19.890	270	J
27.	UNKNOWN	19.992	260	J
28.	UNKNOWN	20.756	370	J
29.	UNKNOWN	22.046	380	J
30.	Olean--ene	22.138	470	J



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FFG23RE

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.11RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10260.D

Level: (low/med) LOW

Date Received: 11/18/96 <sup>18</sup> 12/4/96

% Moisture: 18 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 8.6

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	22.168	730	J
2.	Urs--ene, -methoxy-, (.beta.	22.360	360	J
3.	UNKNOWN	22.725	270	J
4.	UNKNOWN	22.948	860	J
5.	Stigmast--en-one	23.049	290	J
6.				
7.				
8.				
9.				
10.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK1

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: BL1119SB

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10216.D

Level: (low/med) LOW

Date Received: / /

% Moisture: 0 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/07/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	330	U
111-44-4-----	bis(2-Chloroethyl)Ether	330	U
95-57-8-----	2-Chlorophenol	330	U
541-73-1-----	1,3-Dichlorobenzene	330	U
106-46-7-----	1,4-Dichlorobenzene	330	U
95-50-1-----	1,2-Dichlorobenzene	330	U
95-48-7-----	2-Methylphenol	330	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5-----	4-Methylphenol	330	U
621-64-7-----	N-Nitroso-di-n-propylamine	330	U
67-72-1-----	Hexachloroethane	330	U
98-95-3-----	Nitrobenzene	330	U
78-59-1-----	Isophorone	330	U
88-75-5-----	2-Nitrophenol	330	U
105-67-9-----	2,4-Dimethylphenol	330	U
111-91-1-----	bis(2-Chloroethoxy)methane	330	U
120-83-2-----	2,4-Dichlorophenol	330	U
120-82-1-----	1,2,4-Trichlorobenzene	330	U
91-20-3-----	Naphthalene	330	U
106-47-8-----	4-Chloroaniline	330	U
87-68-3-----	Hexachlorobutadiene	330	U
59-50-7-----	4-Chloro-3-Methylphenol	330	U
91-57-6-----	2-Methylnaphthalene	330	U
77-47-4-----	Hexachlorocyclopentadiene	330	U
88-06-2-----	2,4,6-Trichlorophenol	330	U
95-95-4-----	2,4,5-Trichlorophenol	830	U
91-58-7-----	2-Chloronaphthalene	330	U
88-74-4-----	2-Nitroaniline	830	U
131-11-3-----	Dimethylphthalate	330	U
208-96-8-----	Acenaphthylene	330	U
606-20-2-----	2,6-Dinitrotoluene	330	U
99-09-2-----	3-Nitroaniline	830	U
83-32-9-----	Acenaphthene	330	U

FORM I SV-1

OLM03.0

2103

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK1

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: BL1119SB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10216.D

Level: (low/med) LOW Date Received: / /

% Moisture: 0 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/07/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

51-28-5-----	2,4-Dinitrophenol	830	U
100-02-7-----	4-Nitrophenol	830	U
132-64-9-----	Dibenzofuran	330	U
121-14-2-----	2,4-Dinitrotoluene	330	U
84-66-2-----	Diethylphthalate	21	J
7005-72-3-----	4-Chlorophenyl-phenylether	330	U
86-73-7-----	Fluorene	330	U
100-01-6-----	4-Nitroaniline	830	U
534-52-1-----	4,6-Dinitro-2-methylphenol	830	U
86-30-6-----	N-Nitrosodiphenylamine (1)	330	U
101-55-3-----	4-Bromophenyl-phenylether	330	U
118-74-1-----	Hexachlorobenzene	330	U
87-86-5-----	Pentachlorophenol	830	U
85-01-8-----	Phenanthrene	330	U
120-12-7-----	Anthracene	330	U
86-74-8-----	Carbazole	330	U
84-74-2-----	Di-n-butylphthalate	22	J
206-44-0-----	Fluoranthene	330	U
129-00-0-----	Pyrene	330	U
85-68-7-----	Butylbenzylphthalate	330	U
91-94-1-----	3,3'-Dichlorobenzidine	330	U
56-55-3-----	Benzo(a)anthracene	330	U
218-01-9-----	Chrysene	330	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	42	J
117-84-0-----	Di-n-octylphthalate	330	U
205-99-2-----	Benzo(b)fluoranthene	330	U
207-08-9-----	Benzo(k)fluoranthene	330	U
50-32-8-----	Benzo(a)pyrene	330	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	330	U
53-70-3-----	Dibenz(a,h)anthracene	330	U
191-24-2-----	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

2104

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK1

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: BL1119SB

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10216.D

Level: (low/med) LOW

Date Received: / /

% Moisture: 0 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/07/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

Number TICs found: 17

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	-Pentene, -dimethyl-	3.450	82	J
2.	UNKNOWN	3.568	590	J
3. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.904	1600	NJA
4.	UNKNOWN	4.052	70	J
5.	UNKNOWN	5.038	150	J
6.	UNKNOWN	5.156	180	J
7. 111-90-0	Ethanol, 2-(2-ethoxyethoxy)-	5.679	67	NJ
8.	'-Biphenyl, '-diethyl-	12.912	270	J
9.	UNKNOWN	13.198	73	J
10.	UNKNOWN	13.238	160	J
11.	UNKNOWN AMIDE	14.728	130	J
12.	UNKNOWN	16.002	150	J
13.	UNKNOWN AMIDE	16.110	220	J
14.	UNKNOWN AMIDE	17.276	2200	J
15.	UNKNOWN AMIDE	17.376	150	J
16.	UNKNOWN AMIDE	19.519	1200	J
17.	.Psi., .psi.-Carotene,	19.708	350	J
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK2

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: BL1120SA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10248.D

Level: (low/med) LOW Date Received: / /

% Moisture: 0 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/08/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

108-95-2-----	Phenol	330	U
111-44-4-----	bis(2-Chloroethyl)Ether	330	U
95-57-8-----	2-Chlorophenol	330	U
541-73-1-----	1,3-Dichlorobenzene	330	U
106-46-7-----	1,4-Dichlorobenzene	330	U
95-50-1-----	1,2-Dichlorobenzene	330	U
95-48-7-----	2-Methylphenol	330	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5-----	4-Methylphenol	330	U
621-64-7-----	N-Nitroso-di-n-propylamine	330	U
67-72-1-----	Hexachloroethane	330	U
98-95-3-----	Nitrobenzene	330	U
78-59-1-----	Isophorone	330	U
88-75-5-----	2-Nitrophenol	330	U
105-67-9-----	2,4-Dimethylphenol	330	U
111-91-1-----	bis(2-Chloroethoxy)methane	330	U
120-83-2-----	2,4-Dichlorophenol	330	U
120-82-1-----	1,2,4-Trichlorobenzene	330	U
91-20-3-----	Naphthalene	330	U
106-47-8-----	4-Chloroaniline	330	U
87-68-3-----	Hexachlorobutadiene	330	U
59-50-7-----	4-Chloro-3-Methylphenol	330	U
91-57-6-----	2-Methylnaphthalene	330	U
77-47-4-----	Hexachlorocyclopentadiene	330	U
88-06-2-----	2,4,6-Trichlorophenol	330	U
95-95-4-----	2,4,5-Trichlorophenol	830	U
91-58-7-----	2-Chloronaphthalene	330	U
88-74-4-----	2-Nitroaniline	830	U
131-11-3-----	Dimethylphthalate	330	U
208-96-8-----	Acenaphthylene	330	U
606-20-2-----	2,6-Dinitrotoluene	330	U
99-09-2-----	3-Nitroaniline	830	U
83-32-9-----	Acenaphthene	330	U

FORM I SV-1

OLM03.0

2133

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK2

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: BL1120SA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10248.D

Level: (low/med) LOW

Date Received: / /

% Moisture: 0 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/08/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

51-28-5-----	2,4-Dinitrophenol	830	U
100-02-7-----	4-Nitrophenol	830	U
132-64-9-----	Dibenzofuran	330	U
121-14-2-----	2,4-Dinitrotoluene	330	U
84-66-2-----	Diethylphthalate	330	U
7005-72-3-----	4-Chlorophenyl-phenylether	330	U
86-73-7-----	Fluorene	330	U
100-01-6-----	4-Nitroaniline	830	U
534-52-1-----	4,6-Dinitro-2-methylphenol	830	U
86-30-6-----	N-Nitrosodiphenylamine (1)	330	U
101-55-3-----	4-Bromophenyl-phenylether	330	U
118-74-1-----	Hexachlorobenzene	330	U
87-86-5-----	Pentachlorophenol	830	U
85-01-8-----	Phenanthrene	330	U
120-12-7-----	Anthracene	330	U
86-74-8-----	Carbazole	330	U
84-74-2-----	Di-n-butylphthalate	330	U
206-44-0-----	Fluoranthene	330	U
129-00-0-----	Pyrene	330	U
85-68-7-----	Butylbenzylphthalate	330	U
91-94-1-----	3,3'-Dichlorobenzidine	330	U
56-55-3-----	Benzo(a)anthracene	330	U
218-01-9-----	Chrysene	330	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	✓21	J
117-84-0-----	Di-n-octylphthalate	330	U
205-99-2-----	Benzo(b)fluoranthene	330	U
207-08-9-----	Benzo(k)fluoranthene	330	U
50-32-8-----	Benzo(a)pyrene	330	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	330	U
53-70-3-----	Dibenz(a,h)anthracene	330	U
191-24-2-----	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

2134

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK2

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: BL1120SA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P10248.D

Level: (low/med) LOW

Date Received: / /

% Moisture: 0 decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/08/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

Number TICs found: 5

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.835	840	NJA
2.	UNKNOWN	4.989	330	J
3.	UNKNOWN	5.117	320	J
4.	UNKNOWN ORGANIC ACID	11.805	68	J
5.	-Dodecatrien--ol, -trimethy	19.658	280	J
6.				
7.				
8.				
9.				
10.				
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26.				
27.				
28.				
29.				
30.				



1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK3

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: BL1218SA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: M4045.D

Level: (low/med) LOW

Date Received: / /

% Moisture: 0 decanted: (Y/N) N

Date Extracted: 12/18/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/20/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

108-95-2-----Phenol	330	U
111-44-4-----bis(2-Chloroethyl)Ether	330	U
95-57-8-----2-Chlorophenol	330	U
541-73-1-----1,3-Dichlorobenzene	330	U
106-46-7-----1,4-Dichlorobenzene	330	U
95-50-1-----1,2-Dichlorobenzene	330	U
95-48-7-----2-Methylphenol	330	U
108-60-1-----2,2'-oxybis(1-Chloropropane)	330	U
106-44-5-----4-Methylphenol	330	U
621-64-7-----N-Nitroso-di-n-propylamine	330	U
67-72-1-----Hexachloroethane	330	U
98-95-3-----Nitrobenzene	330	U
78-59-1-----Isophorone	330	U
88-75-5-----2-Nitrophenol	330	U
105-67-9-----2,4-Dimethylphenol	330	U
111-91-1-----bis(2-Chloroethoxy)methane	330	U
120-83-2-----2,4-Dichlorophenol	330	U
120-82-1-----1,2,4-Trichlorobenzene	330	U
91-20-3-----Naphthalene	330	U
106-47-8-----4-Chloroaniline	330	U
87-68-3-----Hexachlorobutadiene	330	U
59-50-7-----4-Chloro-3-Methylphenol	330	U
91-57-6-----2-Methylnaphthalene	330	U
77-47-4-----Hexachlorocyclopentadiene	330	U
88-06-2-----2,4,6-Trichlorophenol	330	U
95-95-4-----2,4,5-Trichlorophenol	830	U
91-58-7-----2-Chloronaphthalene	330	U
88-74-4-----2-Nitroaniline	830	U
131-11-3-----Dimethylphthalate	330	U
208-96-8-----Acenaphthylene	330	U
606-20-2-----2,6-Dinitrotoluene	330	U
99-09-2-----3-Nitroaniline	830	U
83-32-9-----Acenaphthene	330	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK3

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: BL1218SA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M4045.D

Level: (low/med) LOW Date Received: / /

% Moisture: 0 decanted: (Y/N) N Date Extracted: 12/18/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/20/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5-----	2,4-Dinitrophenol	830	U
100-02-7-----	4-Nitrophenol	830	U
132-64-9-----	Dibenzofuran	330	U
121-14-2-----	2,4-Dinitrotoluene	330	U
84-66-2-----	Diethylphthalate	330	U
7005-72-3-----	4-Chlorophenyl-phenylether	330	U
86-73-7-----	Fluorene	330	U
100-01-6-----	4-Nitroaniline	830	U
534-52-1-----	4,6-Dinitro-2-methylphenol	830	U
86-30-6-----	N-Nitrosodiphenylamine (1)	330	U
101-55-3-----	4-Bromophenyl-phenylether	330	U
118-74-1-----	Hexachlorobenzene	330	U
87-86-5-----	Pentachlorophenol	830	U
85-01-8-----	Phenanthrene	330	U
120-12-7-----	Anthracene	330	U
86-74-8-----	Carbazole	330	U
84-74-2-----	Di-n-butylphthalate	19	J
206-44-0-----	Fluoranthene	330	U
129-00-0-----	Pyrene	330	U
85-68-7-----	Butylbenzylphthalate	330	U
91-94-1-----	3,3'-Dichlorobenzidine	330	U
56-55-3-----	Benzo(a)anthracene	330	U
218-01-9-----	Chrysene	330	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	330	U
117-84-0-----	Di-n-octylphthalate	330	U
205-99-2-----	Benzo(b)fluoranthene	330	U
207-08-9-----	Benzo(k)fluoranthene	330	U
50-32-8-----	Benzo(a)pyrene	330	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	330	U
53-70-3-----	Dibenz(a,h)anthracene	330	U
191-24-2-----	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

2155